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*The Journal of the*  
KANSAS MEDICAL SOCIETY

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VOLUME LIV

JANUARY, 1953, TO DECEMBER, 1953, INCLUSIVE

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*Published Monthly by*

THE KANSAS MEDICAL SOCIETY





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# THE JOURNAL of the KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

Volume LIV

JANUARY, 1953

No. 1

## The Management of Terminal Patients with Inoperable Carcinoma\*

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The care of the patient with terminal cancer is a poorly understood and challenging problem. The definition of terminal care should perhaps start from the time that the patient's disease cannot be managed surgically or effectively by any means of obliteration. At that time a plan should be made which will cover the expected life of the individual; it should be discussed with and understood by the family. I think that in the past too many of us have had an attitude of hopelessness, expressed like this: "The patient has cancer, there's nothing we can do for him anyway, so let's see that he gets all the morphine he needs and call it a day."

Fortunately, there is a great deal more that we can do for these patients. Most of them are not going to die tomorrow or the next day or the following week, or the following month. Unless we are aware of this problem and take on the responsibility, we will lose not only patients but also the good will of the families concerned.

Before accepting the responsibility of treating a patient with inoperable cancer, certain basic information is essential. The physician should be thoroughly familiar with past and present symptoms. It is no less important to know the physical findings at the onset and at the time of diagnosis of his disease, their progression and their change, than to know the extent of disease at the time terminal care is instituted. Too often patients are said to have carcinoma because of certain x-ray findings. They are given a prognosis, yet, as Dr. Churchill says, "The world is full of people who should have been dead six months ago." Without an accurate pathological diagnosis, it is impossible to plan an intelligent course of treatment since such diseases as Boeck's sarcoid, lupus erythematosus, and the like may be readily mistaken for carcinoma unless proof is available in pathological slides.

Too often carcinoma is deemed inoperable, and you are asked to care for a patient by the surgeon or another colleague. Don't take his word for it. Re-examine the problem; see if the patient is operable. Too often the family is told, "Well, he is 65 years of age, he has a bundle branch block, has cancer, and just won't ever survive surgery." Such is not the case, since more than 60 per cent of such patients have significant salvage rates following adequate surgery.

Then, too, patients may be abandoned at one exploratory laparotomy and the disease found resectable by other surgeons who are more experienced. I think that these facts should always be kept in mind before beginning the long last mile with the patient.

It is important to have a knowledge of the natural history of the type of cancer which the patient has. Patients with a lymphoma may live from a few months to as long as 20 years; patients with carcinoma of the thyroid have, by and large, slowly growing tumors and may live five, six, or more years. You will certainly give the family an incorrect appreciation of what to expect if you are not aware of the natural history of the type of cancer that you are dealing with.

In no field of medicine is environment and the patient's reaction to it more important. Keeping up the morale of the patient is certainly dependent upon the diagnosis as well as the prognosis. How much do you tell the patient? Do you tell him he has carcinoma, or not? As you know, the opinion is widely divided in this country with some people advocating telling the patient not only that he has a malignant disease, but outlining in detail what he can expect to happen to him. Another group feels that this information should not be divulged to the patient, except under extreme duress. I think this problem should be individualized. There are cer-

\*Presented at the Fourth Annual Mid-West Cancer Conference, Wichita, Kansas, April 3 and 4, 1952.

tainly some individuals who would at least have to know that they have a malignant disease, but it is a heartless thing to give them a too definite idea of what to expect, or a hopelessly grave prognosis. The white lies one tells in managing these patients are as numerous as the tablets the patient has to take during the course of treatment.

By and large, it is not our custom to tell a patient that he has a malignant disease except in extraordinary instances, because we have found that the morale of these people disintegrates; they are depressed and despondent, and members of the family can't help but take on some of the coloring of the patient's reaction to this unhappy information. Although we may tell a patient that he has a tumor, we do not necessarily say that it is malignant. Hardly ever is it necessary to give a patient an accurate idea of what to expect from his disease.

Too little is known about the effect on the psyche of deforming surgery. Dr. Sutherland at Memorial has shown that patients who have had gastrectomies and colostomies may represent incredible psychotherapeutic problems simply as a result of the surgery itself. Families are heard to remark, "It would have been better if he had died of a gastric hemorrhage; all he does is sit around and cry." "He's not a man anymore" and the like. These situations can be avoided if the patient has an understanding of what procedure is going to be done when he goes to surgery. A woman should not awake or become aware two days postoperatively of the fact that she has a permanent colostomy and have to adjust to it at that time. Some preparation of the patient for this eventuality should be made.

The doctor-patient relationship is more important than generally realized by the doctor. To the patient it is all important. Too often the physician comes in and says, "Hello Jim, how are you? My, you look fine today."

The badly frightened patient says, "Well, I've got a pain."

The doctor says, before the patient can say any more, "Oh, that will pass. Here is a new prescription," and walks out.

You cannot keep the confidence of the patient by such techniques. It is important to take time to listen to his complaints, not only to listen to him, but to try to evaluate his symptoms and understand their source. At the same time, careful, periodic physical examinations must be done if you are to retain the confidence of the patient. Failing this, the patient will leave you and become a prey to the numerous quacks who invade the fringe of medicine with various types of cancer "cures" with which all of us are too familiar.

The patient with inoperable carcinoma should be kept out of bed and as active as possible for as long

as possible. He should be encouraged to engage in any activity up to tolerance. Too often these patients remain in bed, partly because they are frightened, partly because of over-solicitousness of their families, asking them every five minutes, "Is there anything I can get you," or "Are you comfortable" and then coming around and patting the pillow. I think that the family should be instructed to give the patient these attentions only on demand, and be told that if they become oversolicitous, the patient may react by becoming bedridden. Providing attention is paid to all of these matters, the reaction of the patient to his disease may be good. He will have a reasonably high morale. He will look forward with hope; he will express great interest in his various symptoms as well as his response to the administration of various therapeutic agents.

Supportive measures constitute one of the bulwarks in the management of the patient dying with inoperable cancer. Nutrition is an ever-present problem, and the patient should be instructed in amounts of various types of food that he must eat to maintain his health. Having such knowledge, the patient will even sometimes keep a record and prove to you that he had adequate nourishment that day. The diet should be supplemented with massive doses of vitamins and with iron, should anemia be a problem. At times, the fluid and electrolyte balance may require the administration of parenteral feedings and parenteral fluids, but these should be reserved until the need is great. Certainly I think the attempt at increased protein intake with some of the various concentrated foods sometimes does more harm than good. Many patients are nauseated by some of the protein or fat concentrates. It is more important to try to get the patient to think of food and choose the proper type. Let him have an exact understanding of what his nutritional needs are from day to day, and he will make a real effort to cooperate with you.

Unnecessary nursing may depress the patient's morale. He should be instructed in the care of his own colostomy, taught how to give his own irrigations, how to manage the irritation of the skin about a gastrostomy, ureteral cutaneous transplant, or tracheostomy. How many times have you personally, or have you seen friends of the family, come into a malodorous sick room and be unable to mask their expression of distaste? Happily today we have chlorophyll derivatives which, sprayed liberally about the patient's room and dressings, minimize this distressing problem.

Control of constitutional complaints demands an understanding of their cause. Generalized malaise may be characterized by weakness, easy fatigability, anorexia and the like. Chills, fever, and sweats are usually due to infections somewhere, and an investi-



gation of the source of the infection is often fruitful with the temperature subsiding following the administration of specific antibiotics. Insomnia should be controlled by the use of sedatives, and/or morphine if pain is involved. Much of the generalized malaise may be due to unsuspected anemia and the administration of transfusions at relatively frequent intervals may result in a prompt and remarkable improvement of the patient who is bedridden.

Obviously, the control of pain assumes prominence at one time or another in most patients who are in the terminal stages of their disease. There is no immediate need to hurry administration of powerful analgesics, but an attempt should be made to control pain with some of the coal tar derivatives such as aspirin and phenacetin. The use of pyramidon should not be forgotten, despite the slight risk of aplastic anemia attendant upon the giving of this medication. If ineffective alone, coal tar derivatives should be given with small amounts of codeine. If pain is still not controlled, resorting to opiates such as morphine, Dilaudid, Pantopon, and Demerol is indicated. Methadon and Dromoran are useful in that they do not depress the level of consciousness of the patient as much as the opiates. It is helpful to employ opiates at night, together with sedatives, so that the patient may obtain adequate rest, and methadon or Dromoran during the day. Metapron is simply mentioned to say that it has not proved particularly effective.

The administration of alcohol, either by mouth or intravenously, may provide relief from pain and sedation that is not easily obtained in other fashions. The administration of five per cent alcohol in 10 per cent glucose with protein hydrolysate solution at night not only gives nourishment but frequently allows the patient a good deal of rest.

In our hands, the use of procaine has been disappointing. When enough of a one per cent solution is given intravenously, the patient develops serious side effects consisting of marked restlessness, nervousness, and even convulsions, so that we have discontinued the use of this particular medication as an aid in the control of pain.

Neurosurgical procedures such as chordotomy and rhizotomy may often give relief from unbearable pain but are not practical when the origin of the pain is below the level of D-6. Pre-frontal lobotomies and other types of brain surgery, although effective in pain relief, often result in such serious mental deterioration that they are rarely resorted to. Patients with pre-frontal lobotomy often say they feel pain but it no longer upsets them. Mental deterioration varies from behavior problems of serious magnitude to complete amentia.

X-ray therapy is one of the most effective specific measures of the control of pain. Before we discuss

pain, we should first know the cause of it. Is the pain from the local tumor; is it from irritation; is it from a metastases of one of the bony structures; or is it due to pressure on one of the nerve roots? When pain is due to bone metastases, the administration of moderate amounts of x-ray therapy, in the neighborhood of 1000 r as a tumor dose, often permits a patient who was bedridden to get up and walk just as spryly as did Dr. Huggins' patients this morning, those who had had bilateral adrenalectomies. The detection of the location of bone metastases may be called to your attention by the patient himself, or by a physical examination, and is finally confirmed by x-ray. Do not deny these patients the use of palliative x-ray therapy for the control of pain. It provides one of the most effective measures available today.

There are specific measures for the treatment of inoperable cancer. These include the use of x-rays directed at metastatic lesions, which, by their very bulk, produce distressing symptoms such as extensive involvement of the mediastinum, for example, or massive enlargement of glands in one part of the body. Such tumors may, not uncommonly, respond to intelligent use of x-ray therapy.

The nitrogen mustards have considerable value, particularly in the management of the lymphomatous diseases, when x-ray therapy is no longer effective. They may promptly control the constitutional symptoms of these diseases, and, finally, nitrogen mustards have proved, in our experience, sometimes as effective in controlling effusions in peritoneal and pleural spaces as x-ray therapy. Twenty to 40 milligrams of nitrogen mustard are injected with 50 cc. of saline into the pleural space, or even into the abdominal cavity when ascites is present. This usually slows, or may rarely prevent, recurrence of effusions in these areas, particularly when the effusions are due to carcinoma of the breast. Such therapy may be repeated several times, providing the white blood count and platelet levels are not below 3,000 per cubic millimeter and 150,000 per cubic millimeter, respectively.

Nitrogen mustard is an effective and useful adjunct in the treatment of anaplastic carcinoma of the lung. Some individuals may respond dramatically to the administration of nitrogen mustard with disappearance of a superior caval syndrome, intractable cough or severe pain. Relief may be afforded for a period of weeks, to several months. Remember, this short time is extremely important to the patient who has cancer. His last few days are as precious to him as months or years of your own life, and if you throw up your hands because your patient has only a short time to live, he will not thank you for it.

The radioactive isotopes have been adequately discussed, and antifolic acid compounds should be

reserved for the treatment of acute leukemia, particularly in children. These are much less effective in adults, and must be given until the white blood count falls to a level of 2,000 or less, for best results. Urethane has proved useful in control of the pain of multiple-myeloma and may, indeed, cause a diminution in the number of plasma cells in the bone marrow. It is given in dosages of one to three grams over a period of two to three months.

Teropterin and placebos are spoken of synonymously because we consider teropterin essentially as a placebo. Placebos do have their place in the management of the patient dying with inoperable carcinoma. Sometimes the administration of any new drug will result in a prompt improvement in the patient and in his morale. Teropterin and other placebos are no exceptions. In a study of pain being done at Memorial Center, it has been noted that an injection of saline, no matter how serious the pain, may provide some relief, although the relief is of short duration. In susceptible individuals whose symptoms are magnified by anxiety and nervousness, significant amelioration of symptoms may be achieved with placebos—a probable reason for the popularity of various cancer cures and nostrums.

The use of estrogens, androgens and adrenalectomy has been discussed by Dr. Huggins and needs no further comment except to point out their efficacy in the management of carcinoma of the prostate and the breast.

Experiments are now being carried out to test the effectiveness of removal of the pituitary gland in the management of patients with inoperable cancer. Too few patients have been so treated to allow approximation of any possible efficacy of this procedure.

There is evidence that x-ray therapy can be dramatically effective in the treatment of inoperable carcinoma of the lung. Chart 1 shows that patients

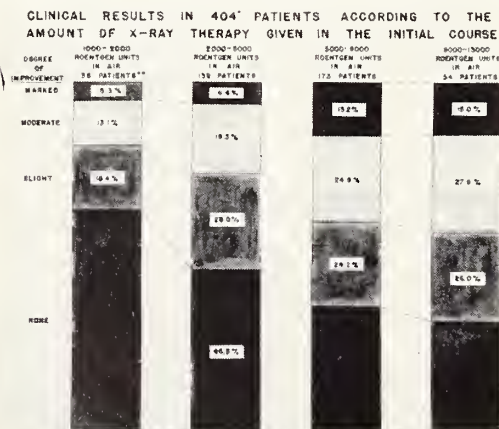


Chart 1

given 5000 to 8000 r have shown various degrees of improvement. Marked improvement is manifested by complete return to normal activity as seen in 15 per cent of these patients. Moderate improvement, meaning that the patient could engage in limited activity and was symptom free, was seen in another 25 per cent. Slight improvement, which means only symptomatic relief of pain, cough, hemoptysis and the like, was seen in another fourth of the patients. The remainder showed no improvement.

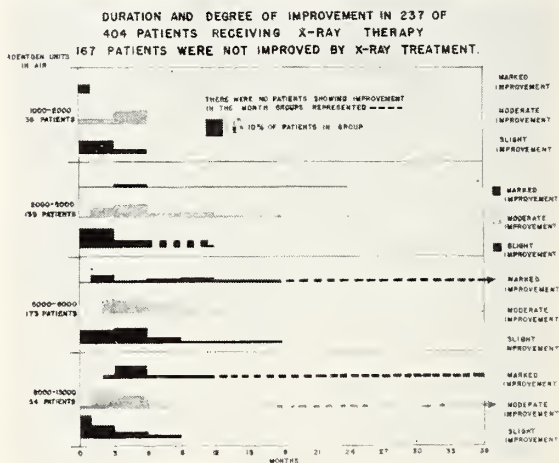


Chart 2

Chart 2 shows that this improvement may persist for a significant period of time. The improvement, whether it be marked, moderate or slight, lasts on the average for six months and may persist for much longer.

SURVIVAL CURVES FROM THE ONSET OF THE FIRST SYMPTOM TO DEATH IN 470 PATIENTS RECEIVING X-RAY THERAPY AND IN 133 PATIENTS WHO RECEIVED ONLY SUPPORTIVE TREATMENT

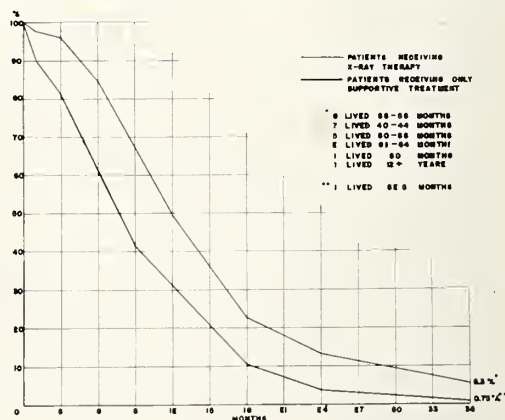


Chart 3

Chart 3 compares the survival rates of 470 patients receiving x-ray therapy with 133 who received supportive care only. There is a difference in the survival rates varying from 25 per cent at nine months to 10 per cent at two years. We have



had six patients who lived five years or longer who were treated with x-ray therapy; the longest control survival was 62½ months. One patient lived 12 years with proven squamous cell carcinoma of the lung, finally dying of heart disease. He was symptom-free and at full employment for 12 years, whereas prior to treatment he had cough, chest pain, and hemoptysis.

The use of ACTH and cortisone in the treatment of leukemia and acute leukemia has lengthened the survival of patients with this disease from a matter of a few weeks to several months. Complete remissions are seen in 15 to 30 per cent of the patients, clinical and hematological remission in 13 to 35 per cent, and clinical without hematological improvement in another 28 per cent. Complete failures occur in only 20 to 40 per cent of the patients with acute leukemia who are given ACTH or cortisone. These statistics are true for children but not for adults. Adults with acute leukemia respond poorly to any therapy.

There is no type of patient who will give a more varied experience than the patient presenting the multiple, sometimes bizarre and always interesting symptoms and physical findings exhibited by dying of inoperable cancer. If you treat four or five of these patients over a year's time, you will have a refresher course not only in internal medicine but in surgery, physical diagnosis, and in therapeutics because all of your skills are stretched to their utmost if these patients are to be kept comfortable. It does make a tremendous difference whether you treat these patients or ignore them.

Cardiac metastases may occur and give rise to symptoms. Forty-four per cent of patients dying of malignant melanoma have involvement of the heart muscle; 44 per cent of patients with leukemia and 24 per cent of those with lymphomas exhibit cardiac involvement. Other tumors involve the heart and pericardium to a much smaller degree. These patients may exhibit symptoms of cardiovascular disease that may respond to ordinary methods of management, but thus far we have not tried x-ray therapy as a means of treating them.

The respiratory system is a favorite repository for metastatic cells and may give rise to various respiratory symptoms by parenchymal or mediastinal involvement. Pleural effusions, when present, should be treated by frequent aspirations and/or the instillation of nitrogen mustard or radioactive gold. It is wise to give every patient with cancer who has a pleural effusion an opiate prior to doing the tap because, as you know, when fluid is withdrawn, severe cough and respiratory distress may develop which is decreased by the prior administration of opiates.

The gastrointestinal system is certainly the sound-

ing board for the psychosomatic patient and no less so for the patient with cancer, who, besides having actual intra-abdominal diseases, has most intense psychosomatic problems. Dysphagia sometimes requires the administration of adequate x-ray therapy to control tumor pressure on the esophagus from without and may be followed by satisfying relief. Medical treatment may consist of the administration of antispasmodics, sedatives and a liquid diet. Sometimes the passage of a Kantor tube is desirable because it can be passed through the stomach and into the duodenum easily. Then feedings can be given without fear of regurgitation or aspiration pneumonia.

Nausea and vomiting may be due to the treatment that you give, to the opiates, to x-ray therapy, or to nitrogen mustard, so don't blame all the patient's symptoms blithely on the fact that he has cancer. Investigate, find their origin and cause, and then institute intelligent measures.

Diarrhea may be extremely distressing. We have found the use of tincture of opium to be an effective measure in the management of this complication. We ordinarily give 20 drops of tincture of opium before meals and at bed time, and after each loose stool, until the diarrhea is controlled. The giving of magnesium trisilicate or aluminum hydroxide is a useful adjunct as is also the institution of a low residue diet.

Intestinal obstruction may sometimes have to be treated surgically, particularly when the immediate prognosis for the patient is not too bad; otherwise, it may have to be managed by intubation and parenteral feedings to control the rather terrible symptoms of intestinal obstruction, that is, pain, nausea, and vomiting, extreme restlessness and the like. It is not fair to ignore these patients. "You have inoperable cancer, you are going to die anyway, it may as well be now" is not acceptable therapy. At least they should have a comfortable exodus, if possible.

The development of ascites is common, needing abdominal paracentesis. The intraperitoneal administration of radioactive gold and nitrogen mustard may delay the reformation of fluid and may, on occasion, prevent its recurrence.

Jaundice, when it appears, should be evaluated to see whether it is due to parenchymal disease such as follows the administration of a transfusion two or three months previously, or whether it is obstructive. When jaundice is obstructive in nature and complete, patients may not survive longer than seven to fourteen days unless treatment is instituted. On occasion, palliative surgery consisting of cholecystenterostomy and the like is certainly justified.

Gastrointestinal hemorrhage should be treated medically by supportive measures, by a regimen of

frequent feeding, supportive transfusions and sedation.

Patients with metastatic disease to the abdomen or to the spine may have distressing bladder symptoms. An individual may have to pass urine every 10 to 40 minutes, and sometimes the simple administration of bladder sedatives or antispasmodics may make him more comfortable. Many are more resistant and those who have urinary retention or incontinence should have a Foley catheter inserted immediately which may be left for weeks or months, providing it is changed and properly cared for and providing moderate amounts of antibiotics are given daily to control ascending pyelonephritis. The development of uremia and oliguria is sometimes susceptible to treatment, particularly when it is due to extrarenal loss of fluid such as is associated with intractable diarrhea, nausea and vomiting, and the like. Then the administration of indicated fluids and electrolytes (sodium, potassium, chloride, bicarbonate or glucose), may produce dramatic improvement in the patient who is critically ill, and he may then live for variable periods in relative comfort.

The importance of the treatment of metastases to bone has been mentioned. The spine is one of the most frequent sites of such metastases and may give rise to severe pain, paresthesias, or paralyses. Adequate x-ray therapy may frequently completely control these symptoms. When these neurological symptoms are present, don't just say, "Oh, the disease has spread. This sounds like curtains," etc.

I recall a patient eight years ago who had a paraplegia due to involvement of the spinal cord with Hodgkin's disease who, following adequate x-ray therapy, was able to carry on a normal life for eight years. If she had been abandoned, she would have been dead long ago. Neurological symptoms are not always due to bone involvement of the spine. Lymphomatous diseases are particularly notorious in this regard, with involvement of the nerve sheaths and pressure on the posterior roots. Intelligent administration of x-ray therapy over the involved areas of the spine and/or the use of nitrogen mustard or triethylene melamine will often result in prompt and dramatic relief.

Local lesions require considerable attention. Neglect of colostomies and gastrostomies will lead to painful ulceration of the skin, and one should have available proper dressings and perhaps use aluminum or soy bean paste to protect the skin from irritating discharges. Keeping the patient ambulatory helps

to prevent the development of bed sores which are fairly common prior to death but can be kept at a minimum and controlled for a long period of time by intelligent care of the skin. Any patient who is incontinent should have an inlying catheter, or tidal drainage should be instituted. Otherwise they are constantly in a wet bed and almost routinely develop uncontrollable bed sores, are intractable nursing problems and quickly become demoralized. Cystitis and ascending infection can be modified by proper catheter care and by giving antibiotics.

Development of intractable pruritus is seen most frequently in the lymphomatous diseases. It may respond dramatically to the administration of nitrogen mustard or triethylene melamine. When these fail, ACTH or cortisone are often effective; ACTH or cortisone may, as you know, help the mental attitude of the patient, and improve his appetite. Both these hormones may cause euphoria, depression, or psychoses. In patients with severe anemia associated with cancer who require frequent transfusions, the administration of ACTH or cortisone may decrease this need. This is corroborated by renewed activity of depressed bone marrow, so it is not just a general effect but specific. Patients with acquired hemolytic anemia and thrombocytopenia react favorably to these hormones. Also, the administration of ACTH, 10 to 20 mgs. intramuscularly every four hours, may decrease or even obviate the need of opiates for the control of pain. When intractable pain becomes a serious problem and surgical measures are under consideration for control of pain in debilitated patients, ACTH should be given a trial in conjunction with opiates. Obviously, one must be aware of the possible unfortunate side effects of the steroids.

In this necessarily short review I have endeavored to prove to you that the terminal care of the patient with inoperable cancer represents a challenge to all of us. These patients exhibit the most complex symptoms and physical findings, and their management demands a wide knowledge of drugs, surgery and radiation therapy. Meticulous care of these patients will allow them to live comfortably for a relatively long period of time, but indifference will result in a premature, often painful, and distressing exodus. Unless we take this responsibility, individuals on the fringe of medicine will take over and treat with various nostrums which will be guaranteed to cure cancer, solely because of indifference, lassitude and an unhealthy attitude of frustration on the part of qualified physicians.



# Treatment of Thyroid Carcinoma with Radioactive Iodine\*

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Treatment of thyroid carcinoma with radioactive iodine has been important, not so much because of benefit to any considerable number of patients, but rather because of the information this isotope has yielded about the biology of thyroid carcinoma. Radioiodine treatment of this tumor has excited both physicians and lay people with the hope, perhaps never to be fulfilled, that it was the first in a series of new treatments to be based upon metabolic localization of an isotope and the resulting internal radiation. Such radiation delivered from within the mass of malignant cells has great advantages, of course. Theoretically it can be limited to the neoplastic tissue with relatively little damage to surrounding normal tissue. Thus, the relative sensitivity of the tumor becomes less important.

Our own experience with radioiodine treatment of thyroid carcinoma is much less extensive than that in several other clinics. The information presented here is largely drawn from the reports of Chapman, Dobyns, Rawson, Seidlin, Trunnell and others.

## Types of Tumor and Their Suitability for Treatment

There has been considerable difference of opinion and misunderstanding over the relationship of the histology of thyroid tumors to their treatability with radioiodine. It is now quite generally agreed that there is a great deal of correlation between histologic type and response to treatment. However, there are individual cases which fail to fit into the expected pattern, and there is sometimes pronounced variation in the histologic type within any one patient. Therefore, while it is possible to make general statements about the iodine concentrating ability of certain histologic groups, it is impossible to predict with certainty whether or not a given patient will receive benefit from treatment until the treatment is tried. It is also true that even a tumor which shows a distinct tendency to take up iodine may not do so to a sufficient degree to allow satisfactory therapy.

Well differentiated, alveolar tumors containing colloid, usually show a pronounced tendency to localize the iodine selectively. It seems likely that almost all tumors of this histologic type can be induced to pick up significant amounts of the isotope. Papillary tumors, which make up a large portion of thyroid neoplasms, are quite variable in

type. Some of them show areas of alveolar structure with colloid, while others are quite undifferentiated. Their tendency to take up iodine is variable but appears to be correlated with the degree of differentiation and the amount of colloid present. Spindle cell, giant cell, and Hürthle cell carcinomas of the thyroid almost invariably fail to collect any significant amount of radioiodine.

## Methods of Studying Iodine Uptake

In considering treatment of thyroid carcinomas with radioiodine, it is essential to utilize suitable methods of determining the localization of the radioactive material given. It seems to us impossible to treat these patients adequately on the basis of clinical response alone. In general, it may be said that when a dose of radioactive iodine is given to any patient, about 90 per cent of it can be accounted for if one adds the amount in normal thyroid and functioning carcinoma to the amount excreted in the urine. The excretion is inversely related to the amount of functioning thyroid tissue or thyroid tumor, and radioassay of urine excretion is of great value. However, to determine whether the retained iodine is in normal thyroid tissue or in tumor, unless we know that the thyroid has already been removed, we must make external counting studies over the thyroid and over the tumor and attempt to estimate the amount of radioactivity in each. We know that in general normal thyroid tissue has more avidity for radioiodine than does tumor, and if normal thyroid is present we can predict that the majority of the retained iodine will usually be in this tissue. After total thyroidectomy has been accomplished, if the patient fails to excrete the greater part of the administered dose in the urine, it is quite certain that most of that retained is in the thyroid tumor.

## Methods of Influencing Uptake of Radioiodine

The most important measure that the physician can use in inducing or increasing the extent of localization of iodine in the tumor is the removal of the normal thyroid tissue. This is believed to increase the uptake in the tumor by two mechanisms. First, there is removal of the competition of the normal thyroid for the available iodine. Second, there is believed to be, as a result of decreased thyroid function, a stimulation of the pituitary to produce more thyroid stimulating hormone, which acts upon the tumor to increase its functional activity. It is generally believed that surgical resec-

\*Presented at the Fourth Annual Mid-West Cancer Conference, Wichita, Kansas, April 3 and 4, 1952. From the Medical Division, Oak Ridge Institute of Nuclear Studies.

tion is the preferable method of eliminating any residual normal thyroid tissue. This has the advantage that it is more rapid than destruction of the thyroid with radioiodine and that it saves the patient from some preliminary radiation damage to normal tissues which might limit later iodine therapy of the tumor.

In patients who have had multiple operations and in whom scarring of the neck is a serious problem, it is sometimes preferable to do radiation thyroidectomy as the first step in treatment. In these cases it is perhaps somewhat arbitrary to imply that there is something special about the radioiodine given for thyroidectomizing purposes, since this is the inevitable effect of large doses of iodine, whatever the intention of the therapist. The presence of normal thyroid tissue does make a real difference, however, in planning treatment. We generally do not give doses larger than 60 mc. at a time for thyroidectomy, while after the normal thyroid is removed it may be advisable to give doses up to 200 mc. Whether thyroidectomy is done by surgery or radiation, it is important to check on its completeness by giving later tracer doses and determining the localization in the region of the thyroid.

All other methods used to enhance the uptake of radioiodine assume that a previous thyroidectomy has been done. One of these is the administration of thyroid stimulating hormone. This material has not been available in large amounts, and most investigators have been forced to rely upon the body's own thyroid stimulating activity. It has been shown, however, that this hormone can increase the tendency of certain thyroid tumors to take up radioiodine, and in the future it may be of some value.

The most important drug used to increase the uptake of radioiodine has been thiouracil, which has been used in rather large doses of from one to two grams per day. The exact action of this material remains somewhat obscure. Even in the presence of normal thyroid tissue, it sometimes appears to cause a change in the distribution of radioiodine with relatively more going to the tumor. It is used chiefly, however, in thyroidectomized patients, and here it is generally given for long periods of time and then stopped about two days before the therapeutic dose of iodine. Several mechanisms of action have been suggested. It may deplete the thyroid tumor of iodine so that it is more avid for this element once the block is removed. It may also augment the local action of thyroid stimulating hormone in some way; or, by increasing the severity of the body's deficiency of thyroxin, it may further stimulate the pituitary to produce this hormone. Whatever its mechanism of action may be, it is clear that thiouracil can be used to increase the amount of radioiodine which will be retained in

the body and taken up by malignant thyroid tumors.

It is important to mention at this point the avoidance of certain factors which may decrease the successful localization of iodine in the tumor. The patient being considered for treatment with radioiodine should not be given stable iodine in any medication. The most common oversight is the use of iodine-containing opaque dyes for radiographic studies. When large amounts of stable iodine are introduced into the body, they may saturate the tissue to such an extent that radioiodine retention is blocked. This effect should not lead to confusion with the fact that tracer doses and therapeutic doses of radioiodine usually show about the same per cent retention and localization in any given patient. In this case even a large therapeutic dose of radioiodine contains so few iodine atoms that it is not in any sense a saturating dose of the element for the body.

Another way in which the treatment of a patient may impair iodine localization is in the use of radiation, either x-ray therapy or previous doses of radioiodine. This has led us to believe that external radiation should not be used until attempts at iodine therapy have been exhausted. Furthermore, it has made us feel that only tracer doses of radioiodine should be given until conditions are optimal for therapy; then a very large initial dose of radioiodine is administered, rather than multiple small doses which might impair the localization before they had done serious damage to the tumor.

#### Undesirable Effects of Radioiodine Therapy

Both local and general undesirable effects may be produced. There may be an initial inflammatory reaction when a large amount of radioiodine is localized in a tumor. This occurs even in more pronounced degree when iodine is being used to remove normal thyroid tissue. This reaction usually develops at about 24 to 48 hours after the dose is given, and may consist of pain, swelling and erythema at site of localization. Occasionally, when a lesion is located at a vital point, serious symptoms may result. One of our patients required a tracheotomy immediately after the first large dose of iodine. A second effect may consist of a transient episode resembling thyroid crisis which is apparently associated with increased blood thyroxin produced as a result of break down of the tumor.

More serious damaging effects of the iodine are those related to total body radiation. Even in cases where the iodine localizes well, there may be considerable total body radiation both from the gamma rays spreading out from the tumor and also from the more uniformly distributed radiation resulting from radioiodine in the blood. Rawson has emphasized the importance of the blood radioiodine level and believes that, on the basis of previous



tracer doses, and blood radioactivity determinations, the radiation of the blood should be calculated in advance and kept below 500 equivalent roentgens. The most important manifestation of total body radiation damage has been bone marrow damage with transient or even permanent and severe depression of the levels of red cells, white cells and platelets. As in other forms of radiation injury, an initial lymphopenia is the most sensitive hematologic change.

Damage to other tissues has not been prominent. A few patients have shown amenorrhea, but it is doubtful that this can be attributed to radiation damage to the ovaries. The question of future genetic effects from these large doses of radioiodine is a difficult one to answer. With our present small success in therapy, there certainly will not be a very large number of patients who have undergone this form of treatment and will later have children. There is also the possibility, of course, of late radiation effects in the patients themselves, such as an increased incidence of leukemia, or production of carcinoma at the site of previous iodine uptake. It is too early to know how important this will be.

Another possible undesirable effect of treatment is to be considered. By removing the normal thyroid tissue, we may cause production of more thyroid stimulating hormone, which in turn may increase the rate of growth of the tumor. If we are then unsuccessful in treating the tumor with radioiodine, we may have done more harm than good. Therefore, it seems desirable not to undertake treatment of the tumor with radioiodine unless it is to be followed up vigorously, and if it becomes apparent that the treatment is unsuccessful, adequate replacement therapy for the myxedema should be given.

Myxedema, of course, is an inevitable complication in all patients who are treated over a considerable period of time. In some instances the tumor itself may be sufficiently functional to prevent the appearance of clinical signs and symptoms. However, we do not believe that the presence of myxedema in itself proves that the tumor is so non-functional that therapy should not be tried.

#### Plan of Therapy

It may be worthwhile to review briefly some of the considerations in deciding upon treatment of a patient with radioiodine. We believe, first of all, that every patient with thyroid carcinoma should have adequate surgical treatment and that the advent of radioiodine has not supplanted surgery. If anything, it has emphasized the need for adequate and sufficiently radical surgical treatment. It is certainly a great mistake to assume that a less adequate surgical approach is needed because of the possibility of later radioiodine treatment, when we

consider that the great majority of thyroid carcinomas cannot be treated successfully with radioiodine.

We accept for treatment only patients who have distant metastases or local extensions of carcinoma which cannot be treated surgically.

The first step in treatment, as has been mentioned before, is completion of a thyroidectomy if this has not already been done. After thyroidectomy, either by surgery or radiation, we check on the completeness of the procedure by means of repeated tracer doses of radioiodine. These are often started within two weeks of the surgical operation, but must be delayed longer after radiation thyroidectomy. These tracer doses help us to determine whether the tumor is showing any tendency to take up iodine. In cases where all of the tumor is adjacent to the normal thyroid and where a radiation thyroidectomy is done, it may be difficult to determine when the normal thyroid is no longer functioning.

As soon as we believe that the tracer doses are indicating a considerable retention of radioiodine in the tumor, we give a therapeutic dose. On the other hand, if there is no significant localization of the iodine in the tumor several weeks after thyroidectomy, thiouracil therapy is started. Again repeated tracer studies are done, the iodine being given two days after the thiouracil is stopped each time. Urinary assays and external counting studies are performed to determine the retention and localization of the iodine. Whenever it is believed that the tumor is retaining a considerable amount of iodine, a large therapeutic dose is given, often of 100 to 200 mc. It is true that the blood level of radiation predicted on the basis of tracer studies may be helpful in determining a safe dose. Following the therapeutic dose, we again give tracer doses after six to eight weeks, and if there is further deposition in the tumor the therapeutic dose is repeated, providing there is not too much evidence of bone marrow damage.

It is extremely difficult to know when to give up the attempt to treat patients who fail to show localization of the iodine. Often their symptoms related to neoplasm are complicated by the severe induced myxedema, and one feels that the attempted therapy has only added to their discomfort. We do not believe that any arbitrary statement can be made about the number of tracer doses or the period of observation which should be insisted upon. We would be inclined to make a more prolonged effort in patients whose tumors were histologically relatively more differentiated. In patients with undifferentiated tumors who have never shown any sign of uptake of iodine, it seems fruitless to make further attempts if there has been no success six months after thyroidectomy. I believe that within



a few years, unless better means are devised for inducing uptake of the iodine, we will be rejecting patients with undifferentiated tumors at the outset, without attempting therapy.

In patients who respond well to treatment, after the tumor seems completely quiescent and there is no more localization of radioiodine, the myxedema is treated, of course, for the patient's comfort. The eventual outcome in these patients is unknown. Dr. Seidlin's initial patient apparently had complete destruction of the thyroid tumor, and one almost feels tempted to use the word cure in describing this patient. However, in the great majority of patients, it appears that even a favorable response is only temporary and that there will be recurrence.

#### Certain Controversial Problems

We are sometimes asked whether or not it is worthwhile to give a tracer dose of radioiodine to all patients who are to be subjected to thyroidectomy for a lesion believed to be thyroid carcinoma. We feel that this is a desirable procedure, since even in the presence of normal thyroid it may be possible to get some idea of the iodine retaining capacity of the thyroid carcinoma. If this is to be done, both autoradiographic and radioassay studies are helpful in addition to the usual histologic studies.

A second question is whether a total or a hemithyroidectomy should be done for a well localized malignant lesion in one lobe of the thyroid. There may be two reasons for doing a total thyroidectomy. First, it may improve the chances of surgical cure by removing a tissue which may have been invaded microscopically by the tumor. Second, it may prepare the patient for later radioiodine therapy if surgical treatment of the tumor is not successful. The disadvantage of total thyroidectomy is, of course, that the patient will have permanent myxedema, and there is a greater possibility of the surgical complications of thyroidectomy. We favor total thyroidectomy, along with whatever lymph node dissection may be indicated, not so much be-

cause of the possibility of later iodine treatment as because of the possible improvement in surgical curability statistics.

Another question which has been asked is whether it would be desirable to give prophylactic therapeutic doses of radioiodine to patients who have had apparent complete removal of tumor but who may have early, non-detectable metastases. Our impression at the present time is that there is not sufficient justification for giving radioiodine treatment when the presence of the lesion to be treated is uncertain and when there is no method of determining the effectiveness of treatment. We would therefore wait until some distinct lesion had developed before undertaking therapy.

Still another question is whether there is any great advantage in detecting metastases at an extremely early point, and whether radioiodine as a means of finding metastases (on the basis of external radiation counting), has any advantage over routine x-ray studies and physical examination. We feel that when the ability of the tumor to take up iodine is unknown, one should rely primarily on the older methods. If the patient is known to have had a tumor of highly functional type, then it may be worth while to give rather frequent tracer doses and to do external counting surveys in hopes of finding early metastases. Theoretically, an extremely small metastases of less than one mm. in diameter might be less suitable for radioiodine treatment than a larger one where the cross firing effect of the iodine in multiple cells would be more pronounced.

#### Summary

In general it appears that not more than 10 or 15 per cent of patients with thyroid tumors can be greatly helped with radioiodine at present. These figures, which are somewhat disappointing, are offset by the fact that a great deal of new and valuable information about thyroid carcinoma has been forthcoming and there are further possibilities of improving therapeutic results.

## Repeated Infections of Gonorrhea

Robert Boese, A.B.\*

Kansas City, Kansas

A survey of the records of persons treated for gonorrhea at the Kansas City-Wyandotte County Health Department has revealed interesting facts about the proportion of persons who become re-infected with gonorrhea. The study includes all patients treated at this clinic from January 1, 1950, to September 30, 1952. Treatment received here

before 1950 was included if the patient reported during this interval. Although some of the patients were treated before the use of penicillin became routine, each case is considered to be a separate infection, either because of a time lapse of several months or because of negative smears and cultures between infections.

The patients treated at this clinic are perhaps of a special class. They are those who do not consult

\*Medical student, University of Kansas School of Medicine; Assistant, Kansas City-Wyandotte County Health Department.

a private physician for one reason or another, and as a rule they are not highly educated. It is believed that sexual contact is on a more "free and easy" basis among these than in other strata of society.

During this three-year period 936 persons were treated for gonorrhea. Of these, 669 (71 per cent) were males, and 267 (29 per cent) were females; 779 (83 per cent) were colored and 157 (17 per cent) were white. The white group had a much larger proportion of persons treated for only one infection than did the colored group.

In the white group, a large percentage of the patients were treated not more than twice, and the percentage of those having multiple reinfections falls rapidly. In the colored group, the number of patients having multiple reinfections shows a more gradual decline.

Males were reinfected a greater number of times than females. The greatest number of infections for males was 13 times in two colored patients. There were no white patients infected more than six times. One colored female was reinfected seven

times. Three white females were treated twice. All the rest were treated only once.

The tables below show the number of cases and the incidence of repeaters for treatment of gonorrhea.

While it is common knowledge that many persons have gonorrhea more than once, it is interesting to observe that a majority at this clinic have the disease only once.

#### All Cases—936

Times Infected	Number of Cases	Per Cent of Total Cases	Per Cent of Those Having More Than One Infection
1	577	62.0	-----
2	171	18.0	48.0
3	79	8.4	22.0
4	39	4.1	11.0
5	40	4.2	11.0
6	15	1.6	4.2
7 or more	15	1.6	4.2

#### Colored Cases—779

Times Infected	Number of Cases	Per Cent of Total Cases	Per Cent of Those Having More Than One Infection
1	450	58.0	-----
2	150	19.0	46.0
3	75	9.6	23.0
4	37	4.8	11.0
5	39	1.7	4.0
6	13	1.7	4.0
7 or more	15	1.9	4.6

#### Male Cases—669

Times Infected	Number of Cases	Per Cent of Total Cases	Per Cent of Those Having More Than One Infection
1	386	58.0	---
2	127	19.0	45.0
3	67	10.0	24.0
4	35	5.2	12.0
5	28	4.2	9.9
6	12	1.8	4.2
7 or more	14	2.1	4.9

#### White Cases—157

Times Infected	Number of Cases	Per Cent of Total Cases	Per Cent of Those Having More Than One Infection
1	128	82.00	-----
2	21	13.00	72.0
3	4	2.50	14.0
4	2	1.30	6.9
5	1	.64	3.4
6	1	.64	3.4

#### Female Cases—267

Times Infected	Number of Cases	Per Cent of Total Cases	Per Cent of Those Having More Than One Infection
1	191	72.00	-----
2	45	16.00	59.0
3	12	4.40	16.0
4	4	1.50	5.3
5	12	4.40	16.0
6	2	.75	2.6
7	1	.38	1.3

## PRESIDENT'S PAGE

Dear Doctor:

This is another year—1953. A new year brings with it a new challenge, and another chance. While the medical profession needs to make no apology for its record of the past, still the thought often presents itself—have we done all that we might and have we lived up to our responsibilities to the fullest measure of which we are capable? The answer naturally is difficult.

If the answer is in the negative, it is not so because of the lack of problems which confront us, but rather that many of us have not been sufficiently interested, or may have lacked inspiration or the proper leadership to have prompted us to our best efforts.

We have many problems to be solved during the coming year. Their solution will challenge the best efforts of all of us. May we have your counsel, help and cooperation in the months that lie ahead to the end that the year 1953 may be one of accomplishment, satisfaction and continued progress for medicine in Kansas.

Sincerely,

A handwritten signature in dark ink, reading "Warren H. Benington". The signature is fluid and cursive, with a large, stylized initial "W" and a long, sweeping underline that extends to the right.



## EDITORIAL COMMENT

### Mid-Winter A.M.A. Session at Denver

The mid-winter meeting of the A.M.A. was held early in December, 1952, in Denver. The sessions were well attended and as usual filled with sectional meetings, televised operations and ample exhibits, both commercial and scientific. The only drawback, if indeed it was such, because the weather was splendid, was the fact that the auditorium was a considerable distance from the hotel area. At its conclusion the consensus was that the meeting was very worth while and had been enjoyed by those who attended.

Of interest here is a synopsis of action taken by the House of Delegates. This body always considers many subjects, and this meeting was no exception. By way of example, it endorsed the creation of a Department of Health and did not specify that its director be a physician. It opposed the use of prisoners for medical experimentation, granting them parole in return for such work. It made no further progress in their previously proposed meeting with the American Osteopathic Association. It accepted the report of the Committee on Medical Education revising standards for internship training, in spite of the fact that many persons felt this would result in reduction of the total number of internships available. It also voted to recommend that the United States withdraw from the International Labor Organization. This created a brief flurry of discussion in which some felt that such action would lose the United States the advantage of listening to the debates, but finally the recommendation was prepared and passed.

The session will be remembered, however, because of two principal items of business, the first of which concerns the doctor draft law. The resolution is not available in its final wording, but from notes taken at the time of the meeting it is recalled that the House voted in favor of renewing the doctor draft law and to include in the new law the \$100 bonus. There were numerous other ideas and suggestions designed toward making this law more equitable, but of more importance probably was the recommendation that uniformed personnel should not be utilized to care for dependents of service men. It was strongly urged that the law contain a section declaring this to be the responsibility of civilian physicians in whatever community service men might be found. The other items are incidental, covering such matters as conservation of physicians, trying to find a system whereby the various services would not need to vie with each other, and an equitable point system. As stated above, the drama arose

from the suggestion that dependents of service men not be cared for by medical officers.

The second major item of business was only tentatively determined, but concerns the Veterans Administration and, more specifically, the availability of facilities in veterans' hospitals for the care of non-service-connected conditions. The problem will require much more study and effort before anything tangible is arrived at, but in short the House of Delegates voted to place the A.M.A. in favor of legislation that would limit the use of Veterans Administration hospitals to patients with service-connected disabilities, except that mental and tuberculous patients could be cared for on a non-service-connected basis if they were unable to obtain care outside. Undoubtedly, further discussions on this subject will arise at the June meeting, which, incidentally, will begin on June 1, 1953. But in the meantime, the above is a brief summary of the present position of the A.M.A. with regard to important medical matters.

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### Rehabilitation of the Handicapped

In a recent edition of the *Current Medical Digest*, Howard A. Rusk, M.D., wrote on rehabilitation. From this article a summary is presented.

There are many problems to be faced with the increasing longevity of our population. These problems concern the nation as a whole as effects are felt on our entire economic program. During the first half of the 20th century, man's life expectancy has risen more than 18 years. An interesting comparison is the life span of 67.2 years in 1950, contrasted to prehistoric life span of 18 years. Ancient Romans advanced this expectancy to 25 years. In 1900, the aid of medical science, increase in medical services, and the rise in standard of living brought the life expectancy to just under 50 years. All of these things continued with the advancement in control of disease, and public health services increased this figure to the life expectancy noted above.

Continual study and research have proved that the greater the increase in life span, or as the population continues living to an older age, the greater the percentage of chronic disease and disability will be. Piersol and Bortz summarized the importance of this problem by saying, "The society which fosters research to save human life cannot escape responsibility for the life thus extended. It is for science not only to add years to life, but, more important, to add life to years."

Medical science is continuing its untiring efforts to find specific answers to many crippling diseases. Many have been found. It is important now, how-

ever, to utilize the many methods of rehabilitation available for those with physical handicaps and to teach these individuals to live at least within the full extent of their capacities.

The two great wars changed the attitude of the public toward a crippled or disabled person. No longer is a person listed as either fit or unfit for work. The early 20th century concept of anatomical perfection has been, in part, done away with by the physiological and functional concept and the subdivision of jobs for which the disabled may well be qualified.

It is vitally important to try constantly to improve our rehabilitation centers and to expand them to a point where centers of this kind will be more readily available for the many who do not yet have the opportunity to take full advantage of their services. In order to do this, everyone, the doctor, therapist, nurse, psychologist, employer, and disabled, must be willing to cooperate.

Neither personnel nor funds are available to build as many centers as are needed, but continual striving and cooperation from all will help bring about the unity needed to more adequately help the physically disabled.

The program of rehabilitation must be started in our hospitals with basic techniques and further references for help suggested. The responsibility of the physician cannot end when the patient or his illness has been cared for. Medical care ends only when the patient has been helped and guided to work and live with whatever his capacity might be.

### The AMA Washington Office

Frank E. Wilson, M.D., has replaced Joseph Lawrence, M.D., as director of the AMA Washington office. During a recent meeting in Omaha he explained to representatives of midwestern states the activities of this office, outlined the work of the 82nd Congress and presented a picture of problems to be faced by the 83rd Congress which is currently in session. From a very simple beginning the AMA Washington office has now expanded to include a total of 17 persons. Dr. Wilson and one other member of the staff are registered lobbyists but, except for a very small portion, their work is almost entirely directed toward the assembling and distribution of information. This goes two ways—both in and out—for the benefit of members of the Congress as well as the medical profession.

During the last session of the Congress some 14,000 bills and resolutions were introduced. Although only a small percentage of this total dealt with subjects of interest to medicine, even that number was so large that no member of the Congress could devote the time necessary to become

informed on all such legislation. Therefore, the Washington office provided its service in that field.

Among the medical bills considered by the last Congress, the following were of particular interest. HR 7800 passed and has become law. This bill rather generally revised the social security program. Section 3 offers a new type of health care benefit for a category known as the permanent and totally disabled. It states that the Federal Security Administrator shall adopt whatever regulations he believes necessary for defining eligibility within this category and determining the benefits in free medical and hospital care that may be obtained and for directing standards under which medical and hospital care may be administered. It is of interest that this section of the law expires on June 30, 1953, and that the benefits will not go into effect until July 1, 1953. Therefore, some future action of one type or another may be expected in this category.

Among the items to be considered by the present Congress is the physician draft law which will expire on June 30, 1953. Much effort is currently being given toward consideration of a more equitable procedure, but the issue remains in doubt. The AMA is attempting to retain the \$100 bonus. The Defense Department wants the age limit lowered to 45, but expects to revise the law so that Group IV physicians with relatively few months of active service may be called together with Group III. There will be further efforts to pass a law comparable to the E.M.I.C. program of the last war. Health benefits for dependents of veterans is certain to receive attention, as will federal aid to medical education and federal aid for local public health units.

The AMA is interested in the Reed-Keogh bill which was not acted upon in the last session. A brief analysis of this bill which has been more completely described in the Journal of the AMA would be to state that it presents for physicians and certain other persons a pension plan. Under this bill a doctor could set aside during his years of maximum income amounts not over 10 per cent of his gross income or \$75,000, whichever is the smaller, and have that exempted from current income. After the age of 65 he would draw monthly benefits from this investment and pay income tax on the withdrawal at the time it is used. Since this affects other than physicians, attorneys, farmers, actors, musicians and many groups are uniting their efforts for passage of the Reed-Keogh bill.

Also of great interest to the medical profession is the I.L.O. Although previously discussed in the Journal, it might be repeated that this International Labor Organization was formed at about the time of the League of Nations. When the United Nations was established, a means was provided for attaching



the I.L.O., although somewhat loosely, to the United Nations. There are today 65 nations, including the United States, participating in the I.L.O. At its annual congress each nation is entitled to send four official delegates: two representing government, one representing labor and one management. Each nation, however, is entitled to only one vote. Decisions of this Congress are referred back to member nations, and in the case of the United States require a two-thirds vote of the members present in the Senate for ratification. The rest of this story and how socialized medicine can be brought in by way of the back door has been previously discussed.

This procedure spoken of as treaty law is a dangerous possibility, not only because of medical implications but for all phases of American life. It by-passes the normal democratic legislative processes that have existed throughout the previous history of the United States.

In spite of the publicity given recent actions by the I.L.O. there are many other examples of potential treaty law that can be equally disturbing. Dr. Wilson advised that there are now about 20 such treaties that can be brought before the Congress of the United States for ratification whenever the President wishes to do so. If two-thirds of the members present vote in the affirmative, it represents commitment by the United States. One such treaty, although almost completely unheralded, is already in effect. It relates to an agreement between Italy and the United States and is called the Treaty of Friendship, Commerce and Navigation of 1948.

Buried in an innocuous, friendly document is a statement that any Italian physician who wishes to practice medicine in the United States must be permitted to do so on a comparable basis as though he were a citizen of the United States.

The above is mentioned only to serve as an illustration of what can happen under treaty law. This situation probably never will create an emergency, but it is not impossible that some far reaching program could be enacted without public knowledge if this type of process is permitted to continue. Senator Bricker plans to introduce a bill to this session of the Congress which will set up processes for writing into the constitution of the United States a provision prohibiting the United States from committing itself to any nation for any purpose on a basis of treaty agreements unless acted upon according to the American concept of democratic legislative processes.

A series of pamphlets dealing with the problems of physical medicine and rehabilitation in multiple sclerosis was recently published by the National Multiple Sclerosis Society, 270 Park Avenue, New York 17, New York. Copies are available without cost upon request of the physician. They are suitable for distribution to patients.

Four manuals for patients have been published, one for independently ambulatory patients, another for patients who are ambulatory with aids, a third for patients confined to wheel chairs, and the last for bed patients.

### Service Separations

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

Niles A. Borop, Jr., M.D.  
U. S. Army Hospital  
Camp Carson, Colorado

Bernard A. Brungardt, M.D.  
137 North 9th Street  
Salina, Kansas

Herbert Bunker, Jr., M.D.  
U. S. Army Hospital  
Fort Riley, Kansas

James H. Enns, M.D.  
211 S. E. 4th  
Newton, Kansas

Charles C. Gilkey, M.D.  
1731 Clay Street  
Topeka, Kansas

Charles R. Hopper, M.D.  
172 Artillery Loop  
Fort Sam Houston, Texas

Edwin R. King, M.D.  
1708 First Street, N.W.  
Washington 1, D. C.

Robert V. Kirk, M.D.  
248 West 12th Street  
Horton, Kansas

Ward A. McClanahan, M.D.  
1425½ Buchanan  
Topeka, Kansas

Arthur W. McMahon, Jr., M.D.  
Winter V.A. Hospital  
Topeka, Kansas

Don R. Miller, M.D.  
1847 Oakland  
Kansas City, Kansas

William J. Reals, M.D.  
Wichita Hospital  
Wichita, Kansas

Joseph E. Seitz, M.D.  
Wakeeney, Kansas

Dana A. Tompkins, M.D.  
Route 2  
Bonner Springs, Kansas

Richard C. Tozer, M.D.  
Winter V.A. Hospital  
Topeka, Kansas

John L. Weaver, M.D.  
4206 Prairie Lane  
Mission, Kansas

Robert Weimer, M.D.  
206 Third Street  
Fort Leavenworth, Kansas

# Case Report From The University of Kansas Medical Center

## Clinical Pathological Conference

### Pulmonary Fibrosis Secondary to Chronic, Indolent Pneumonia

Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the departments of medicine, pathology, and radiology, and the junior and senior classes of medical students.

#### Case Presentation

A. S. (KUMC No. 52-7365), 60-year-old male farmer and mill worker, was admitted June 19, 1952, and expired July 4, 1952.

Chief complaints were shortness of breath, chest pain, cough and loss of weight.

History of the present illness was that two and one-half years ago, while carrying a bale of hay, there occurred sudden marked shortness of breath and substernal pain of such severity and duration that medical attention was sought. An EKG was taken at that time. Treatment was given for "asthma" without benefit. There had been 25 or 30 episodes similar to the initial one, except that the chest pain occurred over various areas anteriorly and laterally, the pain and severe dyspnea usually lasting about an hour.

Since the onset of symptoms, there had been a chronic cough productive of as much as a cupful of white or brown foamy sputum per day. There was never gross hemoptysis. For the past year marked hoarseness was noted. There had been a 30-pound weight loss despite adequate diet.

Three months prior to admission, following a severe bout of dyspnea and chest pain, the patient was hospitalized for five weeks. Streptomycin was given. EKG and x-ray studies were made, the latter being reported to show pericardial effusion, mediastinal opacity, and collapse of the left lower lobe of the lung. ACTH, 10 mgm. three times a week, had been given a short time before admission. Three days before admission to KUMC, severe chest pain and dyspnea recurred and the patient was admitted for further examination and treatment.

The past history was not significant.

Family history revealed that the father died of cancer of the mouth. One brother died of lung trouble, said to be a fungus infection.

Systems review brought out a history of "sinus trouble" for 18 years.

The physical examination showed P 84, R 24, BP 120/88, T 98.4°. The patient was a well developed, thin, white man, dyspneic at rest. Lips were slightly cyanotic. Fingers and toes showed

clubbing. EENT was normal. The trachea deviated to the right. The symmetrical chest had limited respiratory excursions, was resonant throughout, but moist rales were audible in both bases posteriorly, especially on the right. The non-enlarged heart had frequent ventricular premature contractions, tones of good quality and no thrills or murmurs. P<sub>2</sub> was louder than A<sub>2</sub>. The abdomen showed only voluntary rigidity and an appendectomy scar. External genitalia and rectum were normal. The neurological examination was normal.

Laboratory findings: Urine—acid, 1.010 to 1.028 sp.gr., trace albumin, no sugar, few granular and hyaline casts. Blood examination showed RBC 4,490,000, Hb 12.8 gm. (83 per cent), WBC 9,900 to 12,400 with a differential count of 86 polys (F 81, NF 5), 8 lymphs, 2 eosinophiles and 4 monos. Sedimentation rate was 25 mm/hr. Wassermann and Kahn were negative. NPN 32 to 42 mgm. per cent. Creatinine 3 to 2.3 mgm. per cent. Blood sugar 28 to 86 mgm. per cent. Serum Na 139 to 145 milliequivalents, K 5 to 6 meq., Cl 95 to 96 meq., CO<sub>2</sub> 33.3 to 38.6 meq. Total protein 6.2 gm. per cent with globulin 2.82 and albumin 3.38. Skin tests with tuberculin, histoplasmin, blastomycin, and coccidioidin were negative.

Total blood volume 3555 cc.—89 cc./kg (normal 70-85 cc./kg). Total plasma volume 2009 cc.—50 cc./kg. (normal 40-48 cc./kg). Total red cell mass 1546 cc.—38 cc./kg (normal 30-37 cc./kg). Arterial blood O<sub>2</sub>—11.8 vol. per cent (69 per cent saturated); CO<sub>2</sub>—61.6 vol. per cent. Venous blood O<sub>2</sub>—4.3 vol. per cent (25 per cent saturated); CO<sub>2</sub>—69.5 vol. per cent. Oxygen capacity 17.1 vol. per cent.

Sputum was negative for acid-fast bacilli and tumor cells.

Vital capacity was 450 to 600 cc. Venous pressure was 210 mm. of water. Circulation time—arm to tongue (decholin)—27 seconds.

During hospitalization, dyspnea was marked and oxygen was given much of the time. Mercurial diuretics, aminophyllin, digitalis, caffeine and cortisone were given. There seemed to be slight improvement. On the 16th day in the hospital, while sitting in a chair, the patient was found to be slumped down and cyanotic. There was no evidence of pain. Efforts at resuscitation were unsuccessful. Death was pronounced 10 minutes later.



Dr. Mahlon H. Delp (Chairman): Any questions of Dr. Slentz?

Question: Were these attacks precipitated by effort?

Dr. Edwin Slentz (Medicine Resident): No, they were not always associated with exertion.

Question: Was the patient aware of time of onset of the clubbing of his fingers?

Dr. Slentz: No.

Question: Was there ever increase in the respiratory rate?

Dr. Slentz: Yes, one recording indicates a rate of 32.

Dr. Delp: Someone noted a respiratory rate of 60 during one episode of dyspnea.

Question: Was he receiving nitroglycerine at the time of any of these attacks?

Dr. Slentz: No, I don't believe he had nitroglycerine.

Question: How long did it take to lose this weight?

Dr. Slentz: Two and one-half years.

Question: What sort of mill did he work in?

Dr. Slentz: He worked in a feed mill for over 17 years.

Question: Did the dyspnea last for a period of three hours or was that just the pain?

Dr. Delp: The dyspnea lasted considerably longer than the pain.

Question: During these spells of pain, was his heart ever irregular or did he have a moderate tachycardia?

Dr. Slentz: He had a tachycardia. To what degree, I don't know. Possibly it is one of the more important pertinent findings.

Dr. Delp: May we see the electrocardiogram now?

Dr. E. Grey Dimond (Medicine): A deep S wave in lead I indicates the main vector is pointing to

the right of 90 degrees, maybe 110 to 120 degrees or even more to the right. Sharp prominent P waves appear which are sometimes said to be P "pulmonale" type P waves. Occasional ventricular premature contractions appear. Over the chest leads in the V 1 position, a P wave is quite prominent and the QRS is a complex which is mainly an R wave. The record is compatible with cor pulmonale. The rate is not too fast, perhaps 100.

Dr. Galen M. Tice (Radiology): We had access to several films that were made over a period of a few years prior to the time these films were made. On the films sent in, the patient had a definite increase in lung fibrosis. There was a progressive increase in the heart size. I was impressed on fluoroscopy with the marked retardation of the degree of pulsation. We didn't think the contour of the heart was very suggestive of pericardial effusion. Our film showed a prominent pulmonary outflow type shadow. It was a moderately large

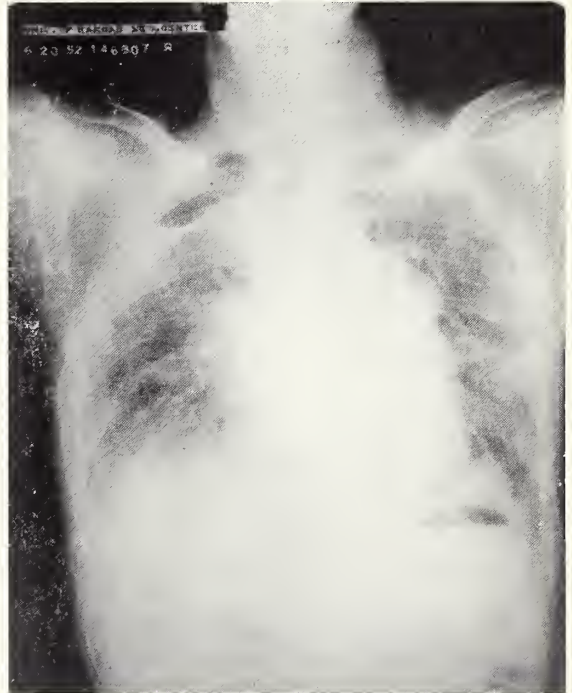


Figure 2. X-ray taken June 20, showing a prominent pulmonary outflow type shadow, moderately large heart, and parenchymal evidence of decompensation and fibrosis.

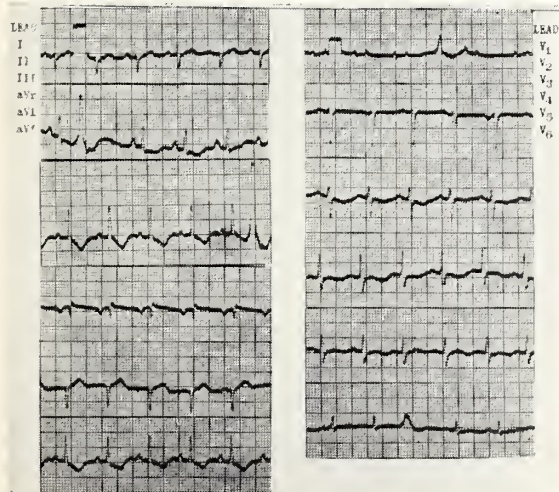


Figure 1. EKG taken June 20 and discussed in text.

heart. There was right heart hypertrophy. I interpreted the changes out through the lung field as a combination of decompensation and fibrosis. I had seen previous films that showed part of this was fibrosis. Probably there was a pneumothorax with air and fluid in the right chest. The pleura showed some thickening down in the lateral aspect of the right chest.

Dr. Delp: Reviewing the history we note the patient worked a number of years in a mill. When we analyze that history a bit, it does not seem to be

as significant as if he had worked in some sort of a mill where ore was processed. The onset is highlighted by severe substernal chest pain. It also is associated with marked dyspnea. I hope we can eventually explain these symptoms. We should further explain the sudden death. Presented with a case in which there is pulmonary insufficiency, we should attempt to determine whether there is failure in ventilation, failure in respiration, or cardiopulmonary failure.

#### Differential Diagnosis

Mr. Charles Replogle (Senior Medical Student): I think that this is a case of pulmonary disease. However, I think first we should rule out several localized lesions which could cause this man's death.

First, an aneurysm can be ruled out by the radiographic studies. Secondly, we should consider a mediastinal tumor which, if present, could well be behind these areas of radiopacity.

In any case of diffuse pulmonary disease we sometimes think of fibrosis as the cause. We have to consider the possibility of the pneumoconioses. Silicosis is probably the most important form because of its diffuse involvement, while asbestosis, iron dust, and the like seem to produce more local necrosis of focal areas.

Inflammatory reactions must be considered, especially with tuberculosis in mind. However, the x-ray doesn't especially indicate that here, but it could be. Tuberculosis is not very apt to cause a cor pulmonale. Less than three per cent of the cases of tuberculosis so result. Further, we have a negative skin test, though this negativity could be present late in the disease. Also there is negative sputum. Other inflammatory diseases such as histoplasmosis, coccidiomycosis and the like are to be considered. We have no history of chronic fever.

Thirdly, I would like to consider malignancies. Melanoma, hypernephroma, and metastasizing lymphoma could cause alterations in the pulmonary membrane preventing adequate oxygenation and causing rapidly developing dyspnea. The duration of this man's symptoms is not consistent with that for advanced carcinoma or malignancy.

This patient shows a vital capacity of 450 to 600 cc. The normal range for a man of 50 years or older is 2200 cc.

I think that this is a case of diffuse pulmonary fibrosis with the so-called alveolar capillary block syndrome.

I'd like to go into the possibility of primary pulmonary hypertension in this patient. Rather obviously, he had a cor pulmonale. On the basis of increased peripheral venous pressure, the increased pulmonary second sounds, increased arm to tongue

circulation time, and the electrocardiographic findings, we are justified in making a diagnosis of cor pulmonale, even though there isn't much evidence of right heart enlargement on the roentgenograms.

This patient had episodes of cyanosis for possibly two years. The age of onset in this man is certainly against primary vascular sclerosis, which in itself is rare. Usually they are 20 to 40 years of age. Usually there isn't a coexisting or preceding pulmonary disease, of which we have definite evidence here. At rest in primary pulmonary hypertension, oxygen saturation of the arterial blood is usually at a normal level. With exercise, of course, it diminishes and is inadequate. This man at rest had inadequate oxygen saturation, with increased venous and arterial carbon dioxide levels. On these observations we can rule out primary vascular sclerosis or primary pulmonary hypertension. There are many causes of secondary cor pulmonale.

Providing that you rule out mediastinal tumor, this diagnosis becomes the so-called alveolar capillary block syndrome which is a diffuse pulmonary fibrosis and the result of emphysema, which probably preceded bronchiectasis and secondary infection.

In an attempt to explain the pain I'd like to suggest it as being due to pulmonary hypertension. Another factor which could produce this is dilatation of the right ventricle and the decreased ability of the coronary vessels to fill during late diastole.

As to the cause of painless death in this situation, I find that is a little harder to explain. I thought about the possibility of a pulmonary embolus due to the decreased blood flow or circulation rate and stasis, but I can't find any origin for this. He could have had a myocardial infarction. I couldn't decide which might have been the cause of death.

#### Clinical Discussion

Dr. Delp: Mr. Hollenbeck, why do you think this patient had pain?

Mr. Virgil Hollenbeck (Senior Medical Student): I think pulmonary arterial hypertension is the explanation, but it could have resulted from ruptured pleural blebs and pneumothorax.

Dr. Delp: Mr. Westcott?

Mr. Thomas S. Westcott (Senior Medical Student): Pulmonary hypertension pain is what I think.

Dr. Delp: Do you think there is any connection between the pain and the severe dyspnea this patient had?

Mr. Westcott: Yes, we almost always find this type of pulmonary hypertensive pain with dyspnea, with cyanosis and with signs of right cardiac hypertrophy.

Dr. Delp: Mr. Kennedy, would you tell me what you think about these CO<sub>2</sub> values—CO<sub>2</sub> of 33.3 meq., 38.6 meq.?



Mr. Lawrence L. Kennedy (Senior Medical Student): I think this patient was in respiratory acidosis because he was unable to breathe off the carbon dioxide.

Dr. Delp: Is respiratory acidosis accompanied by a rapid respiratory rate?

Mr. Kennedy: It should be to a certain extent until at a certain point the respiratory center is no longer susceptible to stimulation.

Dr. Delp: I notice that the nurses remark in their notes that the patient would refuse to stop taking oxygen. Does that mean anything to you? Do you think he might have been addicted to oxygen, or is that a legitimate term?

Mr. Kennedy: I think it is a possibility in an emphysematous patient with fibrosis.

Dr. Delp: Dr. Voth, from the data that we have available, do you think that this man had primarily ventilatory failure?

Dr. Harold Voth (Medicine): I checked the chart. The only studies we have are the vital capacity studies, which mean nothing as far as pulmonary function studies are concerned. From what we have available, I would perhaps put him in physiological classification four, which is cor pulmonale.

Dr. Delp: There is a little more information available on the protocol and in this chart with regard to the blood volume changes. Dr. Reissmann, I would like to have your comments concerning this part of it.

Dr. Kurt Reissmann (Medicine): We can say from the protocol that this was a man in severe anoxia and furthermore that this anoxia was arterial or respiratory as manifested by the lack of oxygen saturation of his arterial blood. In addition, there was some circulatory or stagnant anoxia as indicated by the very low oxygen saturation of the venous blood, the increased venous pressure and the long circulation time. The anoxia in this patient, however, was certainly not due to fibrosis and obliteration of the pulmonary capillary bed, because in those cases arterial anoxia does not occur. The low arterial oxygen saturation in this man indicates that a pulmonary disease was present, which prevented a normal gas exchange across the alveolar membrane. But from the vital capacity determination alone, we cannot decide whether emphysema or atelectasis due to an extended inflammatory process was the main factor.

At any rate, the anoxia in this man was so severe that it may account for his sudden death, because we know that whenever the arterial oxygen saturation approaches 60 per cent, a very critical situation arises and values lower than 60 per cent are not compatible with life. So I would not be surprised to hear that the pathologist did not find any direct cause of

death other than severe manifestations of anoxia.

Now a few words about the blood volume. Presumably the anoxia of this man was present for quite a time, but we found no increase in red cell mass as we are used to finding in longstanding anoxemia. I believe that in this case either an anemia of infection or an anemia of tumor concurred and prevented a polycythemia developing.

Dr. Delp: Dr. Dimond, do you have any evidence from this story so far given that this man did belong to Cournand's group four, with true cardiopulmonary involvement? Do you think you could conclude that from the EKG or any other evidence we have?

Dr. Dimond: This electrocardiogram should indicate strain or increased pressure in the pulmonary circuit producing this cor pulmonale. The markedly prolonged circulation time, some 25 per cent above normal, and the increased venous pressure (rather than right heart pressure) would indicate that in association with ventilatory difficulty and his capillary alveolar difficulty, he also had a failing right heart.

As to his sudden death, I would like to mention the lungs. The fact that this person had chest pain first of all makes you think of heart disease, but he had been having recurrent chest pain moving around over his chest. I'd be more inclined to think that he was rupturing emphysematous blebs. In checking his EKG's and clinical notes for a clue to his sudden death, we find that he was having frequent ventricular premature contractions which may indicate that he died from ventricular arrhythmia. Also, the fact that he had extreme pressure upon his right heart suggests death from coronary occlusion involving the right heart rather than the left heart, which you don't see very often, but he'd be a candidate for it.

Dr. Delp: Perhaps we are overstressing the symptom of pain, but it seems to me a rather interesting item in the history. I would like to poll two more people, asking about the pain and their opinion as to why the man died suddenly. Dr. Rankin?

Dr. Thomas J. Rankin (Medicine): My feeling about his sudden death would be Dr. Dimond's last choice. He more likely died of ventricular arrhythmia secondary to further development of strain on his heart. X-rays show a partial pneumothorax which might have been present at one time when he had these severe episodes of pain which were interpreted as coronary occlusion by his physician. Pleural pain, as people often have after such an episode, would explain part of this pain, the pulmonary hypertension part of it, coronary insufficiency another part. So I think we may be belaboring the issue in trying to get all those pains into the same category. The only further suspicion I would elect to nomi-



nate here is his occupation as a mill worker. There is a possibility, although faint, that thrombosis might have started the whole thing.

Dr. Delp: Dr. Berry?

Dr. Max Berry (Medicine): Here is a fellow with a pneumothorax on the x-ray who had episodes of pain. I don't mean this in any derogatory way toward the x-ray department because this was done elsewhere, but I think they might have been influenced a bit by the physical findings when they made that x-ray diagnosis of pericarditis. A not too uncommon clinical syndrome could explain this man's picture. That is the syndrome of mediastinal emphysema. He had a beautiful set-up for it. He had a pneumothorax that even I can surmise on these films from x-ray. A pneumothorax or a rupture of the continuity of the lung is necessary to produce emphysema in the mediastinal space. Somebody made a diagnosis of pericarditis, which is not an uncommon diagnosis in patients who have the crunching sound that occurs with mediastinal emphysema.

I don't believe this is cardiac pain. The reason for it is that we have to go on the assumption, which is more or less borne out clinically, that any pain in the chest is due to the heart, due to a coronary artery disease, and if it lasts over 30 minutes, it is probably myocardial infarction. There are symptoms of that, of course, but if this man had 20 or 30, or whatever it was, episodes of pain that lasted an hour, then he didn't have 20 or 30 episodes of myocardial infarction.

#### Pathology Report

Dr. Ann Pollak (Pathology): Grossly, the lungs showed diffuse fibrosis, together with many areas of consolidation which were patchy, some gray and others red. Both lungs were definitely increased in density throughout. Microscopy revealed an extensive chronic pneumonitis with early organization. This was characterized by areas in which all of the alveoli were filled with macrophages with a mod-

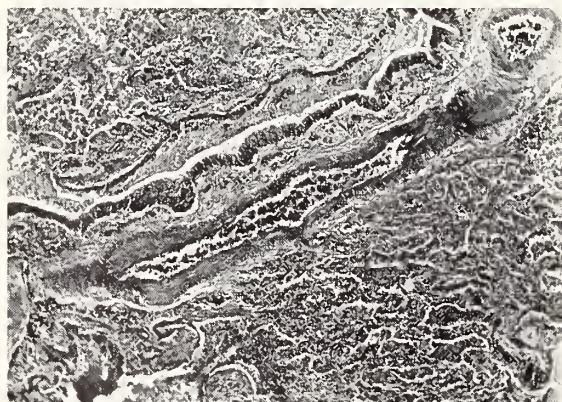


Figure 3. Photomicrograph of lung under medium high power, showing chronic active organizing pneumonia. This is one of the more acute areas. Other areas show more fibrosis than this.

erate number of polymorphonuclear leukocytes embedded in an amorphous pink-staining network, apparently consisting of fibrin and cytoplasm. Some areas were confluent in distribution, others were patchy. The bronchi were dilated and partly filled with similar material. In other areas the process had gone on to extensive fibrosis with complete disorganization of the lung architecture. In these areas, there appeared extensive endarteritis of pulmonary arteries and also of the bronchial arteries.

Incidental findings were generalized atherosclerosis excepting the coronary arteries, chronic nephrosclerosis, focal chronic pericarditis, pleural adhesions, and adenomata of the prostate.

This case represents what appears to be a definite clinical syndrome of a progressive, chronic, and indolent type of pneumonia proceeding to organization and eventually right heart failure. There have been several cases of this nature reported in old men. The cause is not definitely known.

This may represent some virus pneumonitis that has not healed for some reason and becomes chronic. It may represent pneumococcal pneumonia treated with antibiotics but without resolution of the pneumonitis because of the extensive damage. Stains of these lung preparations did not show bacteria. Cultures were negative for fungi and tubercle bacilli.

Other factors which could conceivably cause this pathological change are irritating chemical agents, such physical agents as radiation or radioactive dust, or possibly an obscure allergy. Some evidence of an hereditary predisposition lies in similar changes occurring in the lungs of identical twins who had been separated for 25 years.

I don't know why he had pain in his chest. Possibly that is explained by the emphysema and the acute pleurisy in one area. Adhesions around the upper lobe probably relate to previous episodes of pleurisy.

Dr. Reissmann: Is this so-called chronic pneumonia a generalized or a localized process?

Dr. Pollak: It was generalized—it involved all of both lungs.

Dr. Delp: Why did this man die?

Dr. Pollak: That I can't answer.

Dr. Tice: Do you think you might miss a small area of pneumothorax?

Dr. Pollak: Yes.

#### Summary

A 60-year-old man suffered with recurrent episodes of chest pain and dyspnea over a two-year period. Clinical observations indicated pulmonary fibrosis with progressive ventilatory and respiratory failure, eventually culminating in death due to cardio-pulmonary failure.

The history of long exposure to dust in feed mill

work is inadequate from the standpoint of pathogenesis. Explanations of the chest pain are unsatisfactory. Finally, the pathologist offers the evidence of a longstanding pneumonia which has proceeded to organization.

With the variety of antibiotics available and our rather casual use of these agents, have we lost our respect for and proper skill in dealing with infections?

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## BLUE SHIELD

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### New Year's Report

The year 1952 has been a fairly successful one for Blue Cross and Blue Shield, considering the fact that a rate change had been made in the late summer of 1951. The statistician's report which follows should be of interest to the medical profession in Kansas.

Blue Shield has now enrolled about 20 per cent of the eligible population in the Kansas plan area. This comprises all of the state except Johnson and Wyandotte Counties which are covered by the Kansas City plan. The net enrollment will pass the 300,000 member mark by February, 1953. During 1952, the net growth in enrollment was 30,000 members as compared with 13,000 members the previous year.

Blue Cross covers over 25 per cent of the eligible population in the plan area. Members covered by Blue Cross as of December 1952 were 403,000. The net growth for Blue Cross was 6,000 members in 1952. The small net increase in Blue Cross enrollment during the year may be attributed to the abnormally high cancellation rate during the early months of 1952. This was a direct result of the increase in dues. The increase in dues was announced to members in the first payment notices they received after August 1, 1951. A portion of the members was billed for the first time at the new rate each month through July, 1952. Overall it appears that about 95 per cent of the members accepted the increased benefits and the higher rate. About five per cent of the members cancelled because of the rate increase.

The 1952 increase in hospital days used per 1,000 members was approximately 12 per cent above the

1951 level of utilization. An increased admission rate accounted for seven per cent of the overall increase. The other five per cent of the over-all increase in hospital days covered was due to an increase in length of stay of three-tenths of a day per admission.

Blue Shield income from membership dues exceeded \$3,100,000 in 1952. Eighty-one per cent of the income was used to pay for services provided by the Membership Agreement. Operating expenses amounted to about 11 per cent of income, and approximately eight per cent of income was placed in the general reserve account of the plan.

Blue Cross income from membership dues amounted to over \$6,100,000 for 1952. Eighty-six per cent of the income was used to pay for hospital cases. Operating expenses amounted to about eight per cent of income, and nearly six per cent of income was placed in the general reserve account.

In 1953, the ever increasing number of days of hospital care per 1000 members presents the greatest problem for both Blue Cross and Blue Shield. If the number of days of hospital care per 1000 members continues to increase, Blue Cross will soon be drawing on its general reserve account to pay for hospital cases. The plans' general reserves are comparable to an individual's savings account. It is undesirable to continue to withdraw money from either a general reserve or a savings account to finance current costs over a long period of time.

Your careful consideration as to the number of hospital days of care each of your patients receives in 1953 will assist Blue Cross and Blue Shield in completing another successful year.

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Pulmonary tuberculosis should be regarded as a potentially curable disease, if by "cure" is meant the return of a patient to gainful occupation for a period of five years or more without detectable reactivation of the disease. In one institution it has been demonstrated that such "cure" can be effected in 98 per cent of minimal cases, approximately 85 per cent of moderately advanced cases, and in even 40 to 60 per cent of far-advanced or most hopeless cases, with the application of scientific knowledge currently available and the active cooperation of all concerned, for an overall "cure" rate of approximately 80 per cent.—*William B. Tucker, M.D., Hoosier Health Herald, March, 1951.*

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The Sedgwick County Medical Society is completing plans for the scientific session of the 94th annual session of the Kansas Medical Society. The meeting will be held in Wichita, May 4-7, 1953.

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Advertisers in the Journal are entitled to the patronage of Kansas physicians.



## ACTIVITIES OF MEMBERS

Dr. Paul R. Slater, Wichita, recently became a diplomate of the American Board of Preventive Medicine.

\* \* \*

Dr. Dean Chaffee, Abilene physician for the past six years, was recently recalled to active duty with the Navy. He reported at Kansas City on December 1.

\* \* \*

Dr. J. P. Haigler, Hays, announces that Dr. William C. McDermott, formerly of New York City, is now associated with him in practice. Dr. McDermott, who obtained his medical degree at Cornell University, is a veteran of World War II.

\* \* \*

Dr. A. W. Fegty, Wichita, was recently appointed chairman of the Committee on Constitution and By-Laws of the American Academy of General Practice.

\* \* \*

The Salina Clinic announces that Dr. C. A. Hartenbower, who has been practicing in Gypsum for the past six months, is now a member of its staff. Dr. Hartenbower will continue to spend two days each week in Gypsum.

\* \* \*

Dr. Charles R. Hopper, who has been in military service since February, 1951, has returned to Emporia and is resuming practice in association with Dr. C. C. Underwood. Before his release from the service, Dr. Hopper was presented a citation for outstanding achievement.

\* \* \*

Dr. C. C. Tucker, Wichita, presented a paper on proctology at a recent meeting of the Southern Medical Association in Miami, Florida.

\* \* \*

Dr. Ralph R. Preston, Topeka, was recently called to active Navy duty. He reported at the Naval Dispensary, Washington, D. C., on December 1.

\* \* \*

Dr. C. S. Huffman, Columbus, was the subject of a feature story in the *Columbus Modern Light* on November 27. The story told of Dr. Huffman's civic, political and professional life and mentioned his selection as "Doctor of the Year" for Kansas in 1948.

\* \* \*

Dr. Dale Smith, who has been practicing in Fredonia since World War II, is closing his office there to become a member of the staff of the Mayo Clinic.

\* \* \*

A story in the *Marshall County News* on Decem-

ber 1 paid tribute to Dr. H. S. Haerle, Marysville, who traveled by jeep and on foot to administer care to his patients during the pre-Thanksgiving blizzard in that community.

\* \* \*

Dr. M. C. McComas, Jr., Concordia, was scientific speaker at a meeting of the staff of Smith County Memorial Hospital, Smith Center, recently. He showed pathological slides and x-ray pictures for study by the group.

\* \* \*

Dr. E. M. Seydell, Wichita, who spoke before a professional group in Tokyo recently, was elected an honorary member of the Japan Broncho-Esophagological Society during his visit in that country.

\* \* \*

Dr. Walter J. Singleton, La Crosse, spoke on "Mental Health" before the La Crosse Community Unit at a meeting held in November.

\* \* \*

Dr. and Mrs. C. Omer West recently returned from a trip to Europe where Dr. West attended a meeting of the World Medical Association in Athens. They also visited in Germany, Switzerland, Italy and Egypt.

\* \* \*

Dr. George A. Westfall, Jr., who recently completed two years service with the 343rd General Hospital in Japan, returned to this country in November and has resumed practice at the Hertzler Clinic in Halstead.

\* \* \*

Dr. James A. Wheeler, Newton, presented an exhibit on western equine virus at the Denver meeting of the A.M.A. last month. Dr. Charles T. Sills, Newton, assisted in the presentation.

\* \* \*

Dr. James B. Weaver, Kansas City, was presented a certificate of honorary membership in the Lawrence Kiwanis Club last month in recognition of his long service with the orthopedic clinic sponsored by the club. Dr. W. O. Nelson, Lawrence, introduced Dr. Weaver at the meeting.

\* \* \*

Dr. F. L. Loveland resigned recently as a member of the medical examining board for the Topeka police and fire departments, and Dr. Lloyd Schwartz was appointed to fill the vacancy. Dr. Omer M. Raines has been named chairman of the board.

\* \* \*

Dr. H. M. Waldorf, Jr., who has been practicing in Greensburg for two years, was called to active duty with the armed forces early this month. He is stationed at Gunter Field Air Base, Montgomery, Alabama.

\* \* \*

An oxygen tent now in use at the Stevens County



Normal peristaltic action results from activity of the muscle layers as they are gently distended by bulk within the intestine; mucosal irritants cause overactivity of the muscle layers resulting in hyperperistalsis or spasm.

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mucil forms a smooth, hydrophilic colloid. As this colloidal mass passes through the large intestine, it exerts a gentle, distending pressure within the lumen, thus initiating the peristaltic reflex necessary for evacuation.

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*Research in the Service of Medicine*



Hospital was purchased from funds contributed by friends of the late Dr. William R. Kenoyer, Hugoton, as a memorial to him.

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## COUNTY SOCIETIES

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Three speakers from the University of Kansas School of Medicine presented the program at a meeting of the Sedgwick County Society held at the Allis Hotel on December 2. Dr. W. Clarke Wescoe, dean, spoke on "Non-specific Matters Pertaining to the Medical School in General," Dr. Fred Kittle discussed "The Indications for Mitral Valvulotomy," and Dr. Kurt Reissmann presented "Anoxia: Its Patho-physiology and Clinical Implications."

\* \* \*

A recent meeting of the Jefferson County Society was held at the home of Dr. and Mrs. F. W. Huston, Winchester. Fifteen physicians were present and viewed a scale model of the Jefferson County Memorial Hospital.

\* \* \*

The Wilson County Society and Auxiliary held a dinner meeting in Neodesha recently. The physicians later went to the office of Dr. Frank A. Moorhead for a business session.

\* \* \*

All members of the Atchison County Society were present at a clinical pathological conference held at the Atchison Hospital on December 9. Speakers were Dr. Kenneth Hollweg and Dr. A. Jollfe, both of Kansas City. A breakfast preceded the conference.

\* \* \*

Twenty-five physicians were present for a meeting of the Central Kansas Medical Society held at Russell on December 11. Dr. W. Clarke Wescoe, Dr. Kurt Reissmann and Dr. Fred Kittle, all of the University of Kansas Medical Center, presented the program.

\* \* \*

A meeting of the Brown County Society was held at Hiawatha on December 5. Guests were Dr. Lucien R. Pyle, Topeka, who spoke on Kansas Voluntary Advisory Committee activities, and Mr. Oliver E. Ebel, Topeka, who discussed indigent health care in Kansas.

\* \* \*

The monthly meeting of the Marion County Society was held at the Kingfisher Inn at the Marion County Lake on December 10. Members of the Auxiliary were guests for the dinner, after which separate meetings were held. At the business session at the office of Dr. G. J. Goodsheller and Dr. T. C. Ensey, the following officers were elected for 1953: president, Dr. T. C. Ensey, Marion; vice president,

Dr. A. C. Eitzen, Hillsboro; secretary-treasurer, Dr. C. R. Magee, Marion.

\* \* \*

Dr. H. L. Patterson was named president of the Pawnee County Society at a meeting held at the Blue Goose, Larned, on December 3. Dr. Earl F. Morris was named vice president, and Dr. George J. Millet was chosen as secretary-treasurer. Dr. O. R. Cram will be delegate to meetings of the Kansas Medical Society. The group formed plans to open a cancer detection clinic at St. Joseph Memorial Hospital.

\* \* \*

Dr. Chester L. Young and Dr. William T. Sirridge were speakers at a meeting of the Wyandotte County Society held in Kansas City December 16. The subject of the program was "Pancreatitis."

\* \* \*

Members of the Marion County Society were hosts at a meeting of the Tri-County Society held at Marion on November 20. Physicians and their wives were present from Marion, McPherson and Harvey counties. Dr. Warren F. Bernstorff, Winfield, president of the Kansas Medical Society, and Mr. Oliver E. Ebel, Topeka, executive secretary, presented the program, speaking on the dangers of Communism.

\* \* \*

A meeting of the Southeast Kansas Medical Society was held at the Parsons Country Club on December 10. Dr. Fred J. McEwen and Dr. Arthur H. Bacon, both of Wichita, presented the scientific program.

September is the healthiest month of the year, judging from the way life insurance death claims are distributed across the calendar, reported a recent release from the Institute of Life Insurance. The fact is also borne out by mortality statistics for the population as a whole. The index of life policy death benefits shows a steady rise after September, until the year's peak is reached in March.

## DEATH NOTICES

VICTOR ROBERT PARKER, M.D.

Dr. Victor R. Parker, 63, an active member of the Osborne County Medical Society, died December 3 in Kansas City. A graduate of the Southwest School of Medicine, Kansas City, in 1913, Dr. Parker began practice immediately afterward in Kansas, locating in Covert. In 1921 he moved to Natoma, where he continued to practice until his death.

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## Senior Thesis from the University of Kansas Medical School\*

### Interpretation of the Blood Sedimentation Rate

Kenneth E. Hedrick\*\*

Kansas City, Kansas

Is this blood sedimentation rate abnormal, and if so what does it mean? This is a commonplace question which arises in the minds of students of medicine and physicians alike. The erythrocyte or blood sedimentation rate (B.S.R. or E.S.R.) is probably the most controversial of the common laboratory procedures. Such debate about the status of the test as an index of ill health leaves one in utter confusion. Certainly a consideration and interpretation of the test is justified.

#### History

Centuries ago the Greeks observed variations in the settling rate of blood withdrawn from ill patients, and it was from these observations that the humoral theory of disease was developed. They noticed the separation of the blood into four layers which they called cholera, phlegma, sanguis, and melancholia. It was theorized that disease was a result of an imbalance of the four "humors," and on this basis they evaluated the condition of their patients.

The humoral theory eventually fell into disfavor, but the belief that an increase in phlegma, the fibrin layer, was a predominant factor in the production of disease continued until the 19th century. The fibrin was considered alien to the blood, and the rationale of bloodletting was to relieve the body of this antagonizing substance.

It was not until 1921 that Fahraeus made the test practical by adding anticoagulant to the blood. He then established standards of normality and abnormality for the sedimentation phenomenon. From that time the use of the procedure has grown rapidly to the popularity it enjoys today.

#### Theory

The blood is, essentially, a suspension of corpuscles in plasma, and the B.S.R. is a measure of the stability of this suspension. The nature of the settling phenomenon is not clear, probably because of the multiplicity of influencing factors. However, through research, a number of these factors have been elucidated. Fahraeus demonstrated correlations between the degree of rouleaux formation, the quantity of plasma constituents, and the sedimentating velocity of red cells.

Rouleaux formation is apparently predominantly determined by the concentration of the protein con-

stituents of the plasma. There is a balance of "active" against "inhibitory" proteins—the fibrinogen and globulin being the most active and the albumin and nucleoproteins being the most inhibitory.<sup>3</sup> Alterations in the balance of plasma proteins, particularly an increase in fibrinogen, are likely to occur in any condition involving tissue destruction or infection. The explanation of this increase is unknown, but it has been suggested that in disease the breakdown of body tissue releases increased amounts of fibrinogen which, in turn, induces rouleaux formation and hence increases sedimentation. Other constituents of the blood seem to play but a small part in blood sedimentation.

Three phases are recognized in the fall of the erythrocytes. The first is a period of rouleaux formation with progressive increases in size of the red cell aggregates. The second phase is a long one of free fall which coincides with the development of the cell clusters to their maximum size. The third phase is one of additional or final settling. The relative duration of these phases is determined principally by the length and diameter of the tube.

#### Procedure

The procedure of the B.S.R. is relatively simple. A graduated tube, into which anticoagulant has been added, is filled to a measured height with freshly drawn blood. After a given time, the depth of the clear plasma forming above the settling cells is measured and the settling rate of the erythrocytes is established.

Extrinsic factors which tend to alter the results of the B.S.R. are due to errors in technique. If the following technical points are adhered to, many of those errors can be eliminated:

1. Pressure on the vein should be minimal when the blood is withdrawn.
2. The blood and the anticoagulant should be mixed thoroughly as soon as possible after withdrawal.
3. The test should be run within a few hours, preferably within two hours after withdrawal.
4. Glassware and needles should be clean and dry so as to prevent dilution and contact with chemicals.
5. The tubes must be kept in a vertical position to achieve the maximum retarding effect of the plasma.
6. Bubbles of air in the column of blood should be avoided.

\*This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

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- 7. The internal diameter of the tube should not be under two mm. Otherwise, irregularities may occur due to temporary blockage.
- 8. Extreme temperatures must be avoided.
- 9. Shaking the blood vigorously for at least two to three minutes will keep the settling error, due to mixing, to within two mm.
- 10. The anticoagulants recommended by the standard methods should be used.

If the procedure is done properly with these points in mind, the results of repeated tests on the same blood specimen should not vary more than two per cent.

Methods

All of the B.S.R. methods are measurements of distance of fall against time, but their results cannot be readily interchanged. Considerations of the four common methods are to be seen in Figure 1.

narrower than two mm. may cause uneven sedimentation, and for this reason micro-methods, using capillary tubes, are said to be unsatisfactory.<sup>4</sup>

Common Altering Factors

Normal alterations may occur in the B.S.R.'s of healthy individuals. Healthy women usually have rates nearly double that for normal men. The mean sedimentation rate is extremely low in infancy and increases to a maximum at puberty, whereafter it slowly decreases until the onset of old age when it rises again. By the Westergren method, Wilhelm and Tillisch<sup>7</sup> found that an elderly person has a normal rate of 35 to 40 mm. in comparison with the normal 20 mm. of a young adult.

Alterations in sedimentation may occur with temperature and climate changes, exercise, menstruation, pregnancy, digestion, and smoking, but with the exception of pregnancy, these alterations are

Methods of Sedimentation

Method	Length of Tube	Height of Blood Column	Diameter of Tube	Anti-coagulant	Method of Reading	Normal Range
Westergren	300 mm.	200 mm.	2.5 mm.	3.8% sodium citrate	mm/60min.	1-3 mm. m. 4-7 mm. f.
Wintrobe	120 mm.	100 mm.	25 mm.	Pot. and Ammon. oxalate (dry)	mm/60min.	2-8 mm. m. 2-10 mm. f.
Cutler	70 mm.	50 mm.	5 mm.	3% sodium citrate	mm/60min. (read and plotted every 5 mm.)	0-9 mm. m. 0-15 mm. f.
Linzenmeier	65 mm.	50 mm.	5 mm.	5% sodium citrate	minutes to settle 18 mm.	350-1500 mm. m. 200-600 mm. f.

Figure 1

Each of the methods has its advantages and disadvantages. The Wintrobe method has the advantage of facilitating hematological work and anemia corrections because it utilizes a hematocrit type of tube and a dry anticoagulant. Many British authorities<sup>1,23</sup> feel that the Westergren method is superior for general purposes. The long tube, along with an anticoagulant of sodium citrate solution, provides a retardation of red cells, thereby effecting more accurate and sensitive readings. The frequent readings of the Cutler method provide the clinician with a graphic curve which yields additional information.

Some workers have devised micro methods which are done in capillary tubes. These methods are said to be valuable procedures in pediatrics; they eliminate frequent venous punctures. However, tubes

not likely to confuse the interpretation. Sedimentation rates in a number of normal men and women were found to vary from week to week but always within normal limits.<sup>2</sup> Rarely does a definitely accelerated rate appear in individuals with normal health and vice versa. B.S.R.'s return to normal slowly after an elevation. Patients who have had acute infections in preceding weeks often show a high rate without an immediate real cause.

The only physiological factor causing a marked elevation in the B.S.R. is pregnancy. The rate is elevated in both the normal pregnancy and puerperium. An elevation of a few mms. to a level of 50 mm./hr. is a normal occurrence; however, an infection will reflect an additional rise in the B.S.R.<sup>19</sup> The return to normal begins about the

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# Pathologically Speaking

## SEDIMENTATION RATE

THE RATE of settling or sedimentation of the red blood cells in whole blood which is mixed with an anticoagulant is known as the sedimentation rate.

Increased settling of red cells in disease has been appreciated for some time. Use of this phenomenon as a laboratory aid in clinical diagnosis is well established.

The exact nature of the underlying factors involved in the settling of red cells in disease is apparently related to alterations in plasma proteins and perhaps cholesterol. The total number and form of red cells are important factors.

The methods of measuring sedimentation rates are of two main types: (1) the time is fixed, and the extent of sedimentation during that period is recorded; (2) the distance of fall is fixed, and the time required to reach that distance is registered. Normal range will depend upon the method used.

The technical features of the test, regardless of method used, also vary according to (1) height of tube, (2) diameter of tube, (3) position of tube, (4) type of anticoagulant. The test should be done on a fasting specimen at room temperature and within one hour of obtaining the sample.

One method includes estimation of packed cell volume so that the sedimentation rate can be "corrected" in relation to any degree of anemia or other red cell discrepancy which may be present.

The sedimentation rate is rapid in diseases in which tissue destruction is taking place; this may be due to the inflammatory or degenerative processes which occur in tumors.

Diseases such as rheumatic fever, pulmonary tuberculosis, gout, rheumatoid arthritis, and most acute pyogenic diseases give rapid sedimentation rates. Acute myocardial infarction also will produce elevation of the sedimentation rate, and the procedure is of great value in following the course of this disease in regards to the stages of healing and the activity to be allowed.

Frequently, when the physician is faced with a diagnostic problem in which it is difficult to establish an organic or a psychosomatic basis in the case, the sedimentation rate, if elevated, will caution him to study the patient again minutely for evidence of organic disease. But it must always be remembered that a normal rate of red cell sedimentation does not necessarily mean an absence of disease.

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fourth postpartum week, and the pre-pregnancy level is reached about the 16th week postpartum.

Some drugs are considered responsible for changes in the B.S.R. Large doses of salicylates may lower the rate of non-rheumatic as well as that of rheumatic patients.<sup>25</sup> It is suggested by Fearnly and Banim,<sup>15</sup> that a normal B.S.R. may not be a reliable index of the absence of rheumatic activity in patients being treated with ACTH or cortisone. They postulate a non-specific effect of hormones in lowering the rates. In dosages employed clinically, heparin and dicumarol do not significantly alter the B.S.R.<sup>5,21</sup>

Blood factors often alter the results of the B.S.R. The number, size, and shape of the erythrocytes are the principal altering influences. Anemias and hydremias are the most important intrinsic factors disturbing the B.S.R.; they tend to elevate the sedimentation readings. Oligocythemias accelerate the rate, and polycythemias retard the rate. Correction of the deviations caused by anemias have been attempted by manipulating the packed cell volumes to normal, either by laboratory means before testing sedimentation or by the use of correction charts. The usefulness of these correction methods is criticized by Poole and Summers<sup>6</sup> in the light of their experimental studies. By correcting the B.S.R., one is possibly interfering with the underlying mechanism of the settling phenomenon. The compensating factors of an anemia are predominantly unknown, and the anemia may be merely a symptom of a complicating disease which in itself is the cause of the abnormal rate. Consequently, single B.S.R.'s in anemic conditions are of doubtful value, and the correction methods have by no means gained general acceptance.

#### Clinical Applications

Clinicians seek objective evidence of disease to compare with subjective judgment. This objective evidence must be associated in a quantitative way to the severity and rate of change of the disease process. Some tests, such as those on blood chemistry, are specific in that they relate the status of certain metabolic functions. But the B.S.R. is a nonspecific test which may be compared roughly with the temperature, pulse and leucocyte count in that it gives information of a general character. The nature of the organic disease is not indicated, but those conditions which cause an accelerated sedimentation rate are those with tissue destruction, infection, or intoxication.

The B.S.R. is a valuable aid in diagnosis, treatment and prognosis over a wide field of clinical areas. The test may serve as a diagnostic lead whereby the presence of a disease process is uncovered, or it may be used as an added tool in the completion of a diagnosis. The B.S.R. may be the

only or the most accurate evidence of favorable or unfavorable response to treatment. It is often quite helpful in controlling the therapeutic regime, particularly in chronic diseases. By means of the B.S.R., the prognosis of a patient may be determined, and occasionally it is the only warning of impending disaster among promising clinical signs.

The B.S.R. is of little value in the early diagnosis of acute infections, but it is most valuable in revealing the development of complications. Mild catarrhal inflammations most frequently register normal, but even a common cold may cause acceleration. Suppurative conditions and inflammations of the serous cavities usually elevate the rate to high levels.

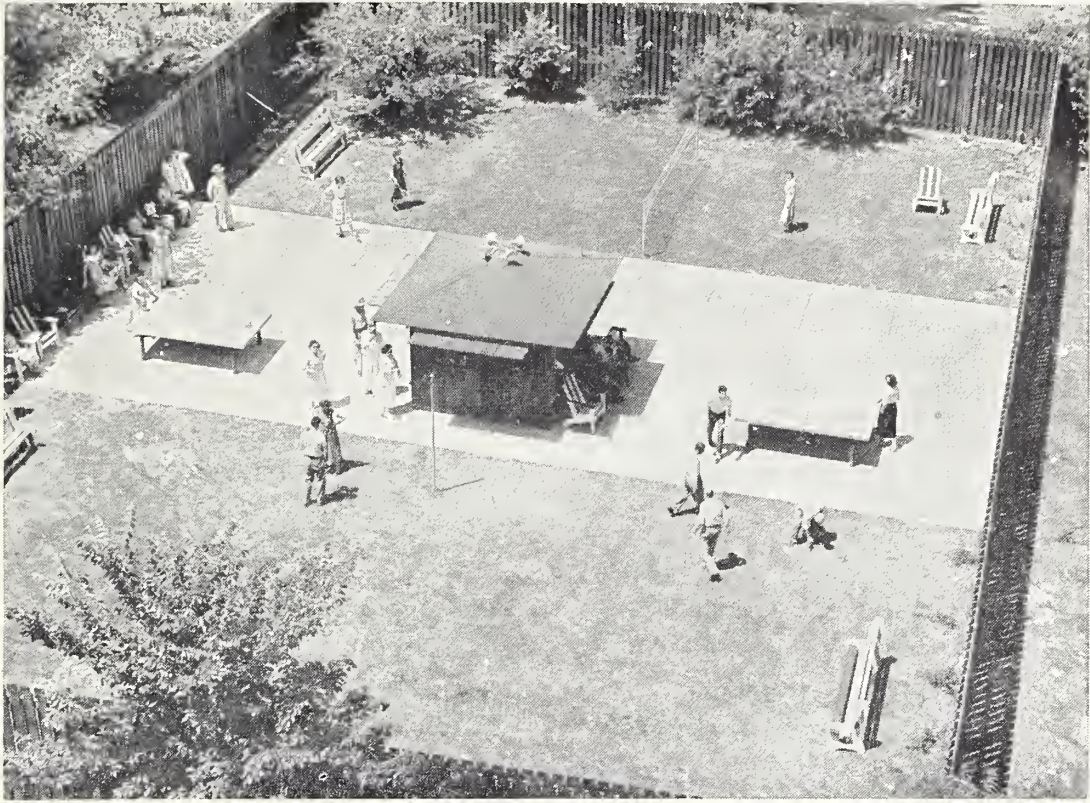
#### Specific Pathological Conditions

The height of the sedimentation curve has long been used as an indicator of the extent and activity of pulmonary pathology. One of the commonest applications of the B.S.R. is in the detection and management of tuberculosis. The test is, perhaps, more valuable in chronic than in acute tuberculosis. In one series,<sup>4</sup> 26 per cent of the patients with active tuberculosis were reported as having normal sedimentation rates. On the other hand, an elevated B.S.R. may be indicative of the presence of disease in the absence of any clinical signs, especially patients with latent tuberculosis. In a child three to four years of age with a positive tuberculin and a normal or equivocal chest x-ray, the question arises as to whether the child's disease is active or quiescent. In the presence of an elevated B.S.R., one can assume the lesion is probably still active, while a normal B.S.R. leads to the assumption that the lesion has healed.

In chronic tuberculosis the B.S.R. is increased and may be used as an index of activity, thereby providing an aid in treatment and prognosis. Usually the rate gradually falls as healing takes place. In normal cases of uncomplicated pulmonary tuberculosis, the sedimentation follows fairly faithfully the clinical condition of the patient.<sup>10</sup> Complications such as pneumothorax with fluid formation, pleural effusion, abscess formation, meningitis, and fistulae are suggested by rising rates.

Cases of tuberculosis are not arrested in the face of a rising sedimentation level. In tuberculosis the B.S.R. should be used in conjunction with all other clinical and laboratory data. When used properly, it is of great value; improperly used the test is valueless and perhaps detrimental.

Acute onsets of pneumonia cause extremely increased rates which gradually decrease with convalescence. Complications such as pleurisy, empyema, or pericarditis precipitate a sudden sharp increase in the rates. The B.S.R. is increased in atypical pneumonia, even in the absence of x-ray findings,



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but is normal in the commoner forms of mild respiratory infections. The B.S.R. is of considerable assistance in determining the time when a patient recovering from atypical pneumonia may resume normal activities.

Data on 65 cases of silicosis<sup>14</sup> suggest that an abnormal B.S.R. is not of value in assessing when a case of silicosis is complicated by pulmonary infection. Possibly this is because all such cases are infected to some degree.

Noninfective allergic disorders such as asthma and hay fever have normal sedimentation rates, but the rates are frequently increased when inflammatory complications occur.

Neoplasms exert a variable effect according to their nature (simple or malignant), location and extent. Generally sedimentation is not significantly altered by simple tumors or cysts, but is usually definitely abnormal in cases with proliferating malignant tumors.<sup>25</sup> Ulcerations, perforations, tissue destruction, necrosis, and upsets in metabolism cause increased rates. Differential aid is often provided by the B.S.R. in determining the malignant tendencies of tumors. For example, if anemias be taken into consideration, the B.S.R. may help differentiate gastric ulcers from gastric carcinomas. In conjunction with the acid phosphatase test, the B.S.R. is of some help in the early diagnosis of carcinomas of the prostate. The presence of skeletal metastasis raises the sedimentation rate.

In Hodgkin's disease and other lymphomas, the sedimentation rate may serve as a guide to radiological therapy. The rate is raised during active proliferation but tends to return to normal during phases of inactivity. A rise may indicate the need for retreatment.

Mayo Clinic physicians<sup>13</sup> found the B.S.R. of value in recognizing diarrheas due to organic disease. With a low rate there existed little chance of organic involvement, but with an elevated rate something was seriously wrong with the bowel such as stenosing enteritis, beginning ulcerative colitis, a tuberculous or cancerous lesion, or a bacillary dysentery. Nervous causes of diarrhea in their early stages can be differentiated from organic disease.

One of the most important applications of the B.S.R. is in the diagnosis of the acute surgical abdomen. The sedimentation reading in cases of unperforated acute appendicitis is almost always uniformly normal, but in all other acute abdominal or extra-abdominal conditions simulating acute appendicitis the B.S.R.'s are consistently abnormal. Only the cases of appendicitis with abscess formation or peritonitis give abnormal readings. Some of the conditions which simulate acute appendicitis are acute salpingitis, acute cholecystitis, genito-urinary infection, pneumonia, sickle cell anemia, and rheu-

matic fever. An individual with one of these diseases may be saved a needless appendectomy by the use of B.S.R.

The blood sedimentation test was originally devised for gynecology and obstetrics. Changes with normal pregnancy have already been discussed. Sharp rises in the sedimentation rate occur in ruptured ectopic pregnancies or with hemorrhage into the peritoneal cavity. In incomplete abortions with retention of secundines and with the onset of sepsis, the readings rise rapidly.<sup>13</sup> Interval determinations of the B.S.R. are used to follow the progress of adenexal diseases so that the optimum time for operation can be chosen.

The B.S.R. has been said to be of little value in liver disorders because of the wide variability in plasma constituents. Goldbloom and Rosen<sup>18</sup> report the B.S.R. of little value in the early stages of acute hepatitis because of a lag in the acceleration of sedimentation. However, they do find the B.S.R. helpful in determining when recovery from acute infectious hepatitis has occurred, because it drops to normal when recovery is complete. In 26 cases of acute hepatitis, the B.S.R. was found more reliable than the cephalin flocculation test in determining when recovery was complete enough to permit the patient to resume his usual activities without fear of relapse.

Psychiatric and neurological disturbances of functional origin do not affect the B.S.R., but in neurological conditions associated with tissue destruction, such as malignant tumors or syphilis, the rate is increased. In uncomplicated polio and other viral infections of the CNS, the B.S.R. is elevated in only about five per cent of the cases at the beginning of the disease.<sup>17</sup> The differentiation of polio and other viral and bacterial infections of the CNS which simulate it cannot be made. Therefore, the diagnostic lumbar puncture can in no cases be replaced by the B.S.R.

The B.S.R. is valuable in some cardiovascular diseases, particularly rheumatic fever and coronary thrombosis. In cardiac disorders not accompanied by active disease, the rate is seldom accelerated. Caution must be practiced in patients with congestive failure, for this is the most prevalent cause of the failure of the B.S.R. to rise in response to existing pathological states. The reason for this retardation is unknown.

The B.S.R. in coronary occlusion and myocardial infarction is a most useful diagnostic procedure, especially when the temperature is normal or nearly so. The test is often valuable in the differential diagnosis of precordial pain, in that angina of effort usually has no marked effect upon the sedimentation.

After myocardial infarction, the rate is seldom elevated before 48 hours, but is increased in almost

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all cases after 72 hours. In a series of 100 cases of proven myocardial infarction reported by Plotz,<sup>26</sup> 97 had elevated rates. The elevation persists for four to eight days, and in most cases the rate is back to normal within five weeks. The rate returns to normal as the infarct heals. If the elevation persists for more than five weeks, extracardial causes should be suspected. When the rate remains high after the patient is clinically well, the patient may be permitted out of bed cautiously after the 42nd day.<sup>26</sup> Thus, the B.S.R. is useful as a guide in management, particularly in regard to convalescent ambulation.

The increased rates of untreated cardiovascular syphilis usually return to normal following successful treatment. In bacterial endocarditis, elevated B.S.R.'s are due to multiple factors which make diagnostic interpretations difficult in diagnosis, but the rates may be of value in evaluating results of penicillin therapy.

In the differentiation of quiescent from active states of rheumatic fever, assistance may be provided by B.S.R.'s particularly when other signs of disease fail to appear. While a raised rate is present, the danger of carditis is not passed. A secondary sharp rise is suggestive of rheumatic carditis. Systolic murmurs can be considered of little consequence only if a normal B.S.R. exists. Rheumatic nodules indicate widespread infection, but often lag behind the B.S.R. changes. Fallacies in sedimentation may be due to blood disorders, liver damage, allergic states, metabolic disorder, upper respiratory infections and cold, tonsillitis, and congestive failure.

One of the most difficult problems encountered in the clinical management of rheumatic fever is determination of the point at which the rheumatic process can be judged to have become inactive. The B.S.R. has come to be widely accepted as the single most reliable laboratory evidence of the presence or absence of rheumatic activity.

The B.S.R. is almost an indispensable step in the differential diagnosis of arthritic conditions and in cases with symptoms referable to the spine. It is a measure of the activity and severity of pathology in joint conditions and is probably related to the total mass of fibrinoid necrosis. Arthritis can be separated into two groups by the sedimentation rate. One group has a normal B.S.R. and includes the cases of fibrositis and osteoarthritis. The other group of rheumatoid arthritis and ankylosing spondylitis has a rapid rate except in exceptional cases. Gout manifests a fluctuating rate of little value. No claim for the cure of rheumatoid arthritis is acceptable without supporting unequivocal evidence of the B.S.R. In Still's disease a fall in the rate, if persisting over a period of several weeks, is often a herald of commencing recovery, although joint symptoms may not

improve until some time later. The B.S.R. is free from bias and is almost essential in the management of chronic rheumatoid diseases.

The B.S.R. may be used in acute nephritis as an index of activity. In cases of urethritis the sedimentation is not unusual, but in the more serious infections such as acute prostatitis, epididymitis, pyelitis and cystitis, the rates are increased. Vesical and renal calculi, prostatic hypertrophy, hydronephrosis and benign tumors, when not complicated by infections, cause no increase in the B.S.R. Rapid rates are found in association with hypernephroma and prostatic carcinomas, as stated earlier.

Many other specific diseases alter the B.S.R., but are of lesser importance. In blood diseases the rates are frequently abnormal; leukemia and pernicious anemia cause large rises. Acute poisoning with lead, arsenic, alcohol, and other toxic substances accelerates the rate. In diabetes mellitus and thyrotoxicosis, the effects are too variable for the test to be of much assistance.

#### Summary and Conclusion

The blood sedimentation rate (B.S.R.) is a non-specific laboratory test of the whole blood which gives objective information of a general character. The nature of the settling phenomenon is not clear because of the multiplicity of influencing factors. Disease states with infection and tissue destruction seem to alter the plasma constituents, especially fibrinogen. This leads to increased rouleaux formation and abnormally accelerated rates.

The B.S.R. provides valuable data concerning diagnosis, treatment and prognosis. It reflects the nature, extent and activity of a disease process. The disease entities in which the B.S.R. is of particular value include tuberculosis, neoplasms, acute surgical abdomens, pelvic pathology, coronary thrombosis, rheumatic fever, and rheumatoid arthritis.

The clinician must assess the B.S.R. in the light of the existing circumstances and must, therefore, know the overall condition of his patient. Misinterpretations can be minimized if he is cognizant of factors which are extraneous to the primary disease process, such as inferior technique, drugs, hidden disease, or concomitant disorders. The physician will find the B.S.R. a valuable aid in clinical evaluations if he appraises it correctly and correlates it with other available clinical data.

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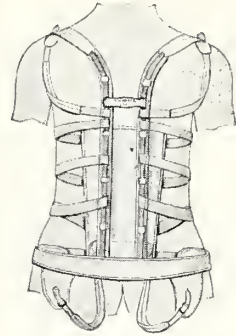
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## THE KANSAS PRESS LOOKS AT MEDICINE

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*Editor's Note. In this section the Journal re-produces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes re-sponsibility for the opinions expressed.*

### Wholesale Slander

Rear Admiral Lamont Pugh, navy surgeon gen-eral, let loose a bitter blast at physicians and den-tists who, he says, are trying in every way they can to avoid entering military service because of their greed and selfishness. All they think about is mak-ing "easier and quicker money," the surgeon gen-eral charged.

Placing a stigma on these two professions for the reason a comparatively few may shirk military serv-ice (it has been that way in every war with persons in all vocations) is wholly uncalled for and reflects no credit on the rear admiral. There are upward of three million men in military service. Total U. S. population has passed the 157 million mark. An acute shortage of doctors and dentists existed in nearly every community, large and small, before

this country became engaged in its "police action" in Korea. Unless it's an emergency, people often have to wait days—maybe weeks—for an appoint-ment with a doctor or dentist. There are rural areas far removed from medical centers which haven't had a resident physician or dentist since shortly after the outbreak of World War II.

The needs of the military must be served first. Certainly no one would want to see the boys in Korea or those at training bases denied adequate service by doctors and dentists. There are, how-ever, disturbing reports of more members of these two professions than are needed at many of the training bases. It will take more than the word of Rear Admiral Pugh to convince people doctors and dentists generally are evading military service. In World War II many military hospitals here at home were greatly over-staffed. Since the rear admiral has asked for it, it might be well for the Congress to name a committee of investigation to find out if Pugh's charges can in any way be substantiated.—*Hays Daily News, November 19, 1952.*

\* \* \*

### Americans Take Care of Health

The American Medical Association reports that by the first of the year 90,000,000 Americans will be covered by some form of voluntary health in-surance.

It is pointed out that the first voluntary plan came into existence only 30 years ago in Seattle. At present every state in the Union has voluntary health insurance sponsored either by medical societies or by other organizations. The major insurance com-panies also write health policies which can be made to cover virtually every contingency.

Another notable development in the health situa-tion is the growth of community health councils. Nine years ago there were only 43 such councils. Now there are 1,190.

This great progress has come about by voluntary individual action. It explains why the scheme for compulsory government health insurance adminis-tered by bureaucrats has been turned down so em-phatically by Congress and why such compulsory insurance has received no widespread public support.

Health problems still remain. Some of them, such as catastrophic illness, are extraordinarily difficult. They are being studied by the medical profession and by various agencies with the promise of eventual victory over some of the diseases which now are so baffling.

It is a real cause for satisfaction to be able to look ahead to even greater improvements in the general health picture through action in various lines by free individuals.—*Dodge City Globe, November 18, 1952.*

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## ABSTRACTS FROM CURRENT LITERATURE

### Acrodynia

*Acrodynia.* By Josef Warkany and Donald Hubbard, *Am. Jnl. Dis. Child.*, 81:3, 335-373, Mar., 1951.

The outstanding symptoms of acrodynia are pink hands and feet, desquamation, scarlet cheeks and tip of nose, alopecia, salivation, loss of several or all of teeth, occasional loss of nails or phalanges, excessive perspiration, evanescent rashes, marked hypotonia, itching, burning, severe pain in the extremities, increased pulse rate, increased blood pressure, photophobia, insomnia and apathy alternating with extreme irritability.

Acrodynia in the past has frequently been considered as due to arsenic intoxication.

The authors present 23 cases of acrodynia and the source of the mercury responsible:

"Teething powders" containing calomel.....	11
Calomel and santonin for worm treatment..	3
Calomel .....	3
Ammoniated mercury ointment .....	2
Bichloride of mercury diaper rinse.....	4

One patient had 1000 micrograms of mercury per liter of urine.

The treatment consists of intramuscular injections of a 10 per cent solution of dimercaprol in oil preceded by 0.5 ml. of a two per cent novocain. Three milligrams per Kg. of body weight was given every four hours for 48 hours, then every six hours for 24 hours, then every 12 hours for seven days.

It is suggested that the exposure to mercury of hypersensitive children is the most important factor in the causation of infantile acrodynia. Older children and adults do not show this apparent sensitivity, probably due to higher tolerance.

It is possible that metal drugs and toxic substances other than mercury produce disease pictures resembling acrodynia.

The effectiveness of dimercaprol (BAL) in the treatment of acrodynia could not be clearly demonstrated in this series. It is probably much more efficacious in the acute mercury poison cases.—D.R.D.

\* \* \*

### Commissurotomy in Mitral Stenosis

*Indications for Commissurotomy in Mitral Sten-*

*osis.* By O. Henry Janton, Robert P. Glover and Thomas J. E. O'Neill, *Am. Jnl. Med.*, 12:6, 621-625, June, 1952.

This article is one of several on various aspects of mitral commissurotomy in the June issue of this journal.

The authors have had over 400 operated cases in this category, and they employ that data plus the literature as a basis for their opinions. Credit is given Sir Lauder Brukton who, in 1902, first said that the only logical method of interrupting the relentless chain of events in mitral stenosis is that of direct surgical reconstruction of the valve itself. He realized that drug therapy was merely an attack on the effects of the disease rather than a correction of its mechanical cause. He considered "lengthening of the stenotic slit" as mandatory, but 46 years elapsed before the operation was possible.

The authors state that events have now proved that an attitude of reticence is no longer justified in considering surgery for the patient with mitral stenosis. They state that the greatest single factor in the successful surgical handling of the patient with mitral stenosis is the proper selection of cases. Their overall mortality has been about 10 per cent, though in well over half their series the mortality has been under five per cent. This favorable group included patients classed reasonably early to moderately advanced. Seventy-eight per cent of this group obtained "clinical cures" though 12 per cent were unimproved.

The authors emphasize that surgical reconstruction of a damaged valve is but a major adjunct in the continuing care of the rheumatic victim. They have seen no setback in patients who were helped in the four-year follow-up period.

They categorize the selection of patients for this therapy under seven headings:

1. The history.
2. Age of the patient (as early as four, usually in early adulthood). Fifty and older are less favorable risks.
3. Valvular defects other than mitral stenosis, particularly aortic, should be considered. The favor-

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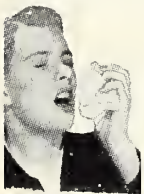
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able case is pure stenosis, and it must be the dominant lesion to justify surgery.

4. Cardiac size as an index of failure has prognostic value, but chamber enlargement is more important. Left ventricular enlargement speaks for other problems and makes the mitral lesion less apt to be dominant.

5. Electrocardiographic evidence of left ventricular hypertrophy is against this therapy. Right axis deviation should be present.

6. Functional capacity, markedly impaired, is unfavorable, though even congestive failure and huge hearts have, when the former was controlled, proved no obstacle.

7. Complicating factors: arrhythmias and previous thrombotic episodes do not contraindicate but it is emphasized that: RHD (active) and SBE do.

A confusing five-stage category classification is offered in which the functional capacity and irreversible nature of the picture are combined in an attempt to set up a workable rule of thumb. The authors' recitation of facts and experience gives their article value.—*P.W.M.*

How many doctors does it take to make a doctor? A survey on the subject was recently made to determine the basic needs of the schools in the event of stepped-up mobilization of doctors.

Staffing patterns in the 72 four-year medical schools were found to vary widely. The "average" school had 26 full-time faculty members per 100 students in February, 1951, the time of the survey. The most heavily staffed school reported 62 faculty members per 100 students, the lowest only 10 per 100.

A considerable number of patients with active tuberculosis refuse to accept hospitalization and remain at home to infect others. Since the advent of streptomycin, home treatment has become increasingly apparent. Whatever the cause—lack of understanding, financial worries or the false hope that adequate treatment is possible at home—home management of active tuberculosis is extremely difficult under the best of circumstances—is rarely adequate and often dangerous, and every effort should be made to have the patient accept hospitalization.—*Paul S. Phelps, M.D., and Reginald C. Edson, M.D., Conn. State Med. J., May, 1952.*

Evidence that red blood cells from an Rh-positive baby can enter the mother's blood stream and sensitize Rh-negative women during pregnancy is described as one of the most important contributions to obstetrics of 1952 by Dr. N. J. Eastman, professor of obstetrics at John Hopkins University Medical School.

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Annual meeting, Kansas Medical Society, May 3-7, 1953, Wichita, Kansas.

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Volume LIV

FEBRUARY, 1953

No. 2

## The Evaluation of Operative Risk in Patients With Cancer\*

John S. LaDue, M.D.\*\*

New York, New York

Operative risk can be defined as the percental chance of the patient's survival. In a broader sense, it must also include an estimation of the incidence of complications, the length of convalescence and the loss of recovery of function as a result of surgery.

Any associated diseases, estimation of the efficacy of vital function, and the delineation of the state of cancer should be accurately defined preoperatively. Then, and only then, can a comprehensive attack on the disease be planned both as regards surgery and continued life-time care of the patient.

The fact that two-thirds of the postoperative deaths occur in patients 55 years of age or more emphasizes the importance of determining the physiological age of the patient. The operation affects the risk according to the magnitude of the strain or stress that it puts on vital systems. Such strain is influenced by the duration of the operation, the anesthetic, the surgical technique and alterations in anatomy, physiology and function resulting from the surgical procedure.

A comprehensive history and a careful, skillful physical examination almost always uncover the presence or probability of complicating disease. It is difficult to exaggerate the importance of the information so obtained. For example, exact knowledge must be available, not only with regard to the nature and extent of the cancer but also exact information concerning the state of nutrition, the soundness of the circulation, and the adequacy of renal and respiratory function. Minimum laboratory data usually needed for evaluation of the operative risk for the patient with cancer who is to have major surgery should include a complete hemogram; an urinalysis; estimations of the blood urea, nitrogens, chlorides, cholesterol, protein, sugar, bilirubin,

prothrombin time and, if possible, a knowledge of the level of the blood sodium, potassium and blood volume. A chest x-ray and an electrocardiogram are important preoperative laboratory studies. Further studies or function tests will be needed to evaluate the severity of any associated diseases thus uncovered.

The presence of certain disease states greatly increases the operative risk. If not recognized and treated promptly preoperatively, they may lead to the death of the patient. The selection of problems for discussion here has been made on the basis of a study of the pre- and postoperative complications most frequently contributing to increased morbidity and mortality of patients undergoing major surgery for cancer.

Many patients with carcinoma, by the time they reach the surgeon, exhibit some evidence of nutritional deficiency. To estimate this, the importance of history cannot be over-exaggerated. Weight loss should be determined, not only in pounds lost but in percentile weight loss. Any patient who has lost more than 20 per cent of his normal body weight will have certain nutritional problems that must be corrected prior to any major surgical procedure.

In the dietary history, it is not only important to know if the patient has had an adequate caloric intake, but just what types of foods he has been eating. For example, the patient may have lost 40 pounds in weight, but the dietary history will disclose that he has had more than adequate protein intake and he may be in relatively good nutritional balance preoperatively. On the other hand, an individual may not have lost much weight at all, but because of the distaste so many cancer patients have for protein, may have significant protein deficiency.

Routine blood counts and hematocrits may sometimes give us misleading information relative to red blood cell mass and plasma volume. It has been

\*Presented at the Fourth Annual Mid-West Cancer Conference, Wichita, Kansas, April 3 and 4, 1952.

\*\*From the Department of Medicine, Memorial Center for Cancer and Allied Diseases.

demonstrated that 70 per cent of patients with cancer coming to surgery have a deficiency in the blood volume, usually in the red blood cell mass, although the ordinary red count, hemoglobin, and hematocrit may be well within normal limits. When blood volume determinations are not available, approximation of this deficiency can be arrived at by the weight loss (assuming the normal blood volume to be 85 cc. per kilogram of body weight). Thus, if the patient has lost 10 kilograms of weight, it can be estimated that he will need 85 cc. of blood per kilogram for each kilogram of weight loss, and a transfusion of 850 cc. would therefore be indicated preoperatively.

TABLE 1  
PREOPERATIVE VALUES\*  
Average Red Cell Count, Hemoglobin and Hematocrit

	9 CA Pan.	6 CA Amp. & Duod.
Red Blood Count .....	4.26 (3.2)	4.40 (4.1)
Hemoglobin .....	13.3 (11.6)	14.4 (13.5)
Hematocrit .....	42.6 (38)	41.6 (35)
Plasma Protein .....	7.03 (6.0)	7.4 (6.1)

\*Unpublished data H. T. Randall—Memorial Center, New York City.

Table 1 lists the average values of hemoglobin, hematocrit and plasma protein for 15 patients with cancer of the pancreas, Ampulla of Vater or duodenum, the figures in parentheses indicating the lowest level. Blood volume determination, however, revealed a frequent discrepancy in red blood cell mass, plasma volume being frequently at or above normal levels (Table 2). Such data demonstrate

TABLE 2  
BLOOD VOLUME DETERMINATIONS\*  
Preoperative 12 Cases (Before transfusion)

Plasma Volume % Normal		Red Cell Mass % Normal	
120-110%	2	100-90%	1
110-100%	5	90-80%	4
100- 90%	3	80-70%	2
90- 80%	1	70-60%	3
62%	1	60-50%	1
		47%	1

\*Unpublished data H. T. Randall—Memorial Center, New York City.

the difficulties of assessing operative risk by routine methods in chronically ill patients. Unless blood deficiencies are corrected preoperatively, shock is prone to develop during surgery or postoperatively. Wound healing is impaired by such deficiencies.

Chart I illustrates the importance of chronic shock. In a patient who had a hysterectomy for menorrhagia of unknown cause, later proved to be due to cancer, the red blood cell count and hemo-

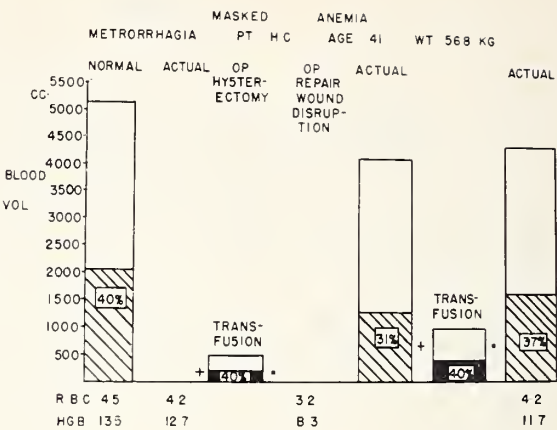


Chart 1

globin were within normal limits preoperatively. During surgery more than the estimated blood loss was replaced by a 500 cc. transfusion. Wound disruption developed on the sixth postoperative day, and blood volume determination revealed an essentially normal total blood volume but a significant red blood cell mass deficiency of 750 cc., not corrected by giving a 1000 cc. blood transfusion. Such complications could probably have been avoided had the red blood cell mass deficiency been corrected preoperatively. The chronic shock syndrome described by Champ Lyons is commonly encountered preoperatively. Patients with cancer giving histories of weight loss and inadequate food intake should lead the clinician to suspect blood volume abnormalities.

Protein deficiencies are extremely common, particularly in gastric carcinoma, occurring in 60 per cent of such patients. Twenty per cent of patients with carcinoma of the colon have measurable protein deficiency. It is impossible to replace such protein deficiency unless any red blood cell mass abnormality is corrected first. Then, the daily administration of 100 to 150 grams of protein, by mouth, or parenterally if necessary, in the form of plasma or protein hydrolysates may be attempted. One thousand cc. of plasma will only raise the blood protein level one gram per cent, and this elevation may be temporary. All patients subjected to major surgery, and particularly those with gastrointestinal cancer, should be in positive nitrogen balance prior to operation, since we know a negative nitrogen balance occurs postoperatively.

Although cancer is a semi-emergent situation, surgery should be delayed until the patient is properly prepared. It is estimated that if a patient loses 10 per cent of his body weight, it usually requires five to seven days to prepare him adequately for major surgery; if he loses 20 per cent, 10 to 12 days; when more than 25 per cent has been lost, as long as 15 to 30 days may be needed to correct



protein, blood volume and other abnormalities preoperatively. Vitamins are given routinely, and it is our custom to administer massive doses of Vitamin C (500 mgm. daily) and Vitamin B Complex in amounts five to six times the daily requirement. This will not only help prepare the patient for surgery, but will also promote wound healing.

Space does not permit discussion of the various physical signs of nutritional deficiency, but the appearance of unexplained edema, purpura, the development of a red, beefy tongue and certain skin lesions with which you are all familiar should suggest vitamin deficiencies.

It might be worthwhile to point out that the diabetic patient does not represent a serious operative risk per se, but only because of the associated arteriosclerotic processes that are so common in this disease.

Masked hypo- and hyperthyroidism often result in fatalities at the operating table, or in the immediate postoperative period. These can be recognized by a careful history and physical examination, and by attention to the levels of blood chemistries suggested as base line data for all patients who have major procedures for cancer.

Adrenal and pituitary deficiency may be suspected in the patient who is sensitive to cold, who has a low blood pressure, and whose electrolytes preoperatively are not normal. Such patients, once considered almost prohibitive operative risks, can now be satisfactorily prepared by replacement therapy with ACTH or cortisone.

The presence of liver disease preoperatively increases operative risk. Certain contraindications to major surgery include the presence of active hepatitis, and when measurements of the liver function indicate severe parenchymal damage, one should hesitate about surgery and should consider the possibility of metastatic disease in the liver. Thymol turbidity levels of 10 units or more, bromsulfalein retention of 50 per cent or more, concomitantly low cholesterol and cholesterol esters, depression of the albumin-globulin ratio, cephalin flocculation of three or four plus, and a prothrombin time that fails to rise to normal limits after the administration of Vitamin K, indicate parenchymal liver disease. Sometimes proper hydration, replacement of blood volume deficiencies, vitamin supplements (especially of B Complex) and high protein intake may result in a significant reversal of these abnormal values of liver function, and the patient can then be considered as a suitable risk for major surgical procedure.

Among the poor risk patients encountered in cancer and other disease, those with cardiovascular abnormalities perhaps lead the list. We should not be misled by the presence per se of an abnormal elec-

trocardiogram, but congestive failure must be treated adequately and promptly and the patient should be compensated for two weeks prior to any major surgery.

Individuals who have had myocardial infarctions within three months, patients with nocturnal dyspnea as a result of hypertensive cardiovascular disease, status anginosa, active myocarditis or pericarditis, aortic disease and marked cardiac enlargement are notoriously poor risks, since at operation such patients are subject to sudden falls in blood pressure, arrhythmias and fresh myocardial infarctions, and tend to be subject to serious postoperative complications. Of less serious import is the presence of heart block, aneurysm of the aorta, sinus tachycardia, healed myocardial infarct and controlled auricular fibrillation.

Patients with congenital heart disease and constrictive pericarditis, although representing increased risk, can be prepared over a period of time with good expectation of surviving major surgery. Active myocarditis, however, is a positive contraindication to any but the most emergent surgery. Arrhythmias too often go unrecognized and untreated preoperatively, as found in the elderly individual with an irregular pulse, but not markedly so, and a normal heart rate, who proves to have auricular fibrillation if an electrocardiogram is taken. When such patients are operated upon, their pulse rate may rise excessively and they may develop acute pulmonary edema and succumb either at surgery or in the immediate postoperative period.

The presence of multiple extrasystoles preoperatively is a foretoken of the development of paroxysmal arrhythmia during surgery and during the postoperative period. Patients with chronic cor pulmonale are extremely bad risks because they have heart disease as the result of extensive lung disease. These patients frequently have polycythemia, and should their hematocrits be 55 per cent or more, they do better when they have phlebotomies as preoperative preparation. Transfusions must be given sparingly during the operative and postoperative periods.

Patients with heart disease are susceptible to postoperative complications. Congestion in the vascular tree may precipitate pulmonary, renal, or cerebral complications. These patients are also less tolerant of complications once they develop. The presence of atelectasis or mild pneumonitis may lead to irreversible heart failure. Such patients should have parenteral fluid given sparingly. It is not uncommon to have acute left ventricular failure or pulmonary edema develop in the patient given injudicious amounts of blood, parenteral fluids and saline. Intelligent use of digitalis, diuretics and oxygen are often life saving.

Table 3 summarizes the mortality rates encoun-



TABLE 3

<i>Author</i>	Hickman	Barnes	Senturia	Brumm-Willius	Levine	Love	Sprague
Total Patients .....	336	35	446	257	414	78	76
% Mortality .....	2.0	0	1.5	4.3	6.3	18	24.7
RHD (total) .....	60	---	---	---	120	16	---
% Mortality .....	1.6	---	---	---	2.1	0.6	---
HCVD (total) .....	91	---	446	100	40	29	---
% Mortality .....	3.0	---	1.5	0	1.0	3.4	---
ASHD (total) .....	44	---	---	1	138	34	---
% Mortality .....	0	---	---	---	4.9	29	---
Infarct (total) .....	8	22	---	32	20	---	---
% Mortality .....	12	0	---	---	40.5	---	---
Angina .....	3	3	---	---	35	---	---
% Mortality .....	33	0	---	---	7.7	---	---
Block (total) .....	11	---	---	---	---	---	---
% Mortality .....	0	---	---	---	---	---	---
Failure (total) .....	20	10	---	---	50	---	---
% Mortality .....	10	0	---	---	17.1	---	---
Syphilis (total) .....	---	---	---	---	11	---	---
% Mortality .....	---	---	---	---	9.1	---	---

tered in patients with heart disease of varying etiology who were subjected to major surgery. Patients with rheumatic heart disease tolerated surgery surprisingly well, with mortality rates from 0.6 to 2.1 per cent. Hypertensive cardiovascular disease increased the risk but slightly, the highest reported mortality being 3.4 per cent. As many as 29 per cent of patients with arteriosclerotic heart disease may not survive major surgery, although there is considerable variability in the different figures listed. Patients with healed myocardial infarcts are not prohibitive risks, the operative mortality being 5.6 per cent. Angina pectoris is associated with mortality varying from 0 to 33 per cent. Patients with heart block are fair operative risks. Congestive heart failure may be associated with high operative mortality unless corrected preoperatively. Aortic disease due to syphilis increases the operative risk significantly.

These data show that it is difficult to evaluate operative risk in a patient with heart disease. Obvious abnormalities such as status anginosus or the presence of congestive heart failure, myocardial infarct, uncontrolled arrhythmias, and acute myocarditis, all represent poor preoperative risks, but many cardiac abnormalities increase the risk but slightly.

Bundle branch block does not necessarily represent a contraindication to major surgery for cancer. Of 59 such patients studied, only three died as a result of the cardiac disease, a mortality of five per cent, certainly not a prohibitive risk since the patients in a similar age group without heart disease have mortalities of three to five per cent. Moreover, with these same patients it was found that the operation per se did not adversely affect long survival as far as the heart disease was concerned. A patient

who survived 19 months or more did so without increasing evidence of heart disease. These patients had major surgery such as gastric resection, pneumonectomy, cholecotomy, etc.

Evidence of healed myocardial infarction is not a contraindication to major surgery. Fifty-eight such patients were operated on at Memorial Center with a mortality rate of 5.2 per cent. Fourteen of these patients were alive two or more years after the removal of their cancers, and 16 have survived one or more years, a 51 per cent salvage rate. Knowledge of such a preoperative cardiac status, however, requires meticulous attention preoperatively, during surgery and in the postoperative period.

Fifty-four instances of cardiac arrhythmia developed as an operative or postoperative complication among 28,000 operations. Forty-two per cent of these patients had no evidence of cardiovascular disease preoperatively. The remainder had hypertensive and/or arteriosclerotic heart disease. Abnormal electrocardiograms were found preoperatively in 31 per cent, and an additional 10 per cent had premature contractions. The importance of prompt control of this complication is manifested by the fact that of the 12 patients in whom the arrhythmia persisted, five succumbed to the complication. Prompt administration of digitalis and/or quinidine to patients developing supraventricular tachycardia preoperatively is recommended. If unsuccessful, a trial of procain amide is justified. An additional series of 60 patients with auricular fibrillation adequately controlled preoperatively survived major surgical procedures with a mortality of only four per cent.

Individuals with cancer, like other patients, may be poor risks as the result of pulmonary disease.

Estimations of the ventilatory function can be done very simply with an ordinary gas meter, standardized in cc.'s. The vital capacity and the maximum breathing capacity may be simply obtained with this inexpensive equipment. When the maximum breathing capacity is less than 34 litres per minute, any chest operation is believed to be contraindicated. Other surgery is fraught with great danger. Patients with limitation of pulmonary function due to bronchial asthma, pulmonary emphysema and pulmonary fibrosis do not tolerate infection in the lung. A mild bronchopneumonia may lead to respiratory distress or precipitate heart failure as a result of the associated anoxia.

Renal disease, or at least some suspicion of renal disease, is not uncommon in individuals with gastrointestinal cancer because they have lost fluid and electrolytes from vomiting or diarrhea. Such patients may have urea nitrogens of 70 or 80 milligrams per cent, correctable by the proper administration of fluids and electrolytes preoperatively. On the other hand, a patient without any serious preoperative symptoms having a blood urea nitrogen of 33 or more, a fixed specific gravity of the urine, a PSP excretion of 20 per cent or less, and a urea clearance of 30 per cent or less, must be considered a very hazardous postoperative risk. Patients with acute glomerulonephritis or the nephrotic syndrome do not tolerate surgery well, frequently going into irreversible oliguria postoperatively.

Patients with pulmonary carcinoma frequently have infection consequent to their disease, and therefore the preoperative use of antibiotics is warranted in such individuals. Indeed it is a good plan to administer prophylactic penicillin 24 to 48 hours preoperatively to patients undergoing major surgery.

The type of anesthesia per se is less important than the skill of the individual who administers it. If an adequate airway and blood pressure are maintained, and a careful check of vital signs is made frequently, the choice of anesthetic agent is not of major importance. During the operative procedure, blood losses should be replaced; crises should be promptly managed, chiefly the cardiovascular variety associated with fall in blood pressure, arrhythmia, or the development of cyanosis. I think it is important to urge that we use less and less opiates for pre-anesthetic medication. These drugs may depress the cough reflex and the ciliary action for an undetermined period of time and be responsible for the development of atelectasis or bronchopneumonia.

In a group of patients 70 years or older, who had various types of anesthesia, the mortality rate and the postoperative complications did not vary significantly whether the patient was given spinal, pento-

tal, or inhalation anesthesia. All of these patients had major surgical procedures for cancer. In the postoperative period, the combination of atelectasis, bronchopneumonia and heart failure accounted for the highest percentage of operative deaths in the 161 elderly patients we have studied who were subjected to major surgery. Care in pre-anesthetic medication, frequent tracheal aspirations, the intelligent use of antibiotics and cardiotonic drugs, with prompt attention to fluid and electrolyte imbalance and surgical complications, played a major part in the survival of these patients.

Elderly patients survive surgery surprisingly well, as indicated by the results of 188 operations in 161 patients, 70 years or older. Of these individuals, 20 died (12.4 per cent). Thirty-one had complications. The end results seemed to justify the surgery, and 75 are living and well, six months to three years later, although 66 have succumbed to their cancer or to intercurrent disease. Various operations are associated with increased operative risks, for example, a 28 per cent mortality for gastric resections as compared to 12.2 per cent for colon resections.

An infrequently emphasized fatal complication encountered in these patients seems worthy of discussion. Six per cent of the patients dying did so from cerebral vascular accidents. It is well known that individuals who had evidence of arteriosclerotic disease of the brain are prone to develop further brain damage following a major surgical procedure. Two of these six patients had such a history. Another two had very definite evidence of senility. When these abnormalities are defined preoperatively, we believe that nothing but the most emergent surgery should be performed.

Postoperative management must be mentioned briefly, and a few high lights should be considered. Certainly the proper use of antibiotics and adequate nursing are essential. Most important of all is to have a physiological explanation or a curiosity to explain any sudden rise in temperature, change in pulse, blood pressure, or respiratory rate, or alteration in the urinary output; much less important is the care of the wound itself. In no other field is the co-operation of surgeons, internists and other consultants more richly rewarded than in the care of the patient subjected to major surgery. The problems encountered demand the combined skill of a trained team.

It might be well to consider the patient who has been doing well, but is unable to take fluids or food by mouth, and may or may not be receiving parenteral fluids. The sudden appearance of marked weakness, listlessness, tachycardia and dry skin would suggest hypochloremic, hypokalemic alkalosis. The electrocardiogram in the undigitalized patient will help to clarify the diagnosis, because

prolongations of the QRS and the QT interval are the rule. Other changes that are characteristic are depression of the ST intervals and variation in the size and shape of the T waves from those observed preoperatively. When blood sodium and potassium levels are determined, the sodium is usually normal with the potassium being three milliequivalents or less. The chlorides are 90 meq. or less and the CO<sub>2</sub> 60-90 volume per cent, and the blood urea above 30 mg. per cent. Such patients respond dramatically to the administration of 60 to 200 milliequivalents of potassium chloride intravenously. The patient who couldn't lift a finger in the morning may be sitting up in the afternoon reading his daily newspaper and expressing a desire for food. Many of the unexplained deaths in the past, when the operation was a success but the patient died, were due to this complication.

Many patients with cancer cannot take food and fluids postoperatively. Daily measurements of the urea nitrogen, chlorides, CO<sub>2</sub>, hematocrit and proteins should be taken so that electrolyte balance can be maintained. It is desirable to keep the fluid intake at or near 1000 to 1500 cc. of fluid over and above the measureable output. The type of electrolytes given will depend upon their concentration in the blood, but, unless a patient has renal dysfunction, 20-60 meq. of potassium chloride should be added to each daily infusion since this much is excreted by the kidney each day when it is unable to conserve potassium.

Many patients with cancer of the gastrointestinal tract are unable to take adequate nourishment orally and become definite nutritional problems. In such

instances, 1500 to 2000 calories may be given by vein in the form of glucose or protein hydrolysates. It is to be hoped that parenteral preparations of fat will soon be available so that even larger caloric intake can be given by vein. Vitamin B Complex and Vitamins C, D, and K can be given intravenously or intramuscularly, to prevent and correct any deficiencies. Too little use is made of intubation for maintaining food and fluid requirements. When patients are unable to take adequate nourishment by mouth, a tube should be passed through the stomach into the duodenum so that formula feedings, water and electrolytes, as desired, may be given both pre- and postoperatively.

Patients with cancer are much more likely to develop thrombophlebitis with its dreaded sequel of pulmonary infarction, and unless these patients are carefully examined every day this complication may be undetected. Prompt administration of heparin and/or dicumarol is the treatment of choice for thrombophlebitis or phlebothrombosis, being maintained for 7 to 14 days, or until the phlebitis has subsided.

Early ambulation is desirable, not so much as an aid in preventing thrombophlebitis but more for its beneficial effects in preventing pulmonary complications, promoting return to normal of gastrointestinal function and shortening the hospital stay.

Our methods for estimating operative risk are obviously crude as yet, and emphasize the need for detailed studies of clinical data if we are to understand what the stress of surgery may represent, so that we can devise improved methods of determining the operative risk.

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# Pregnancy Complicated by Spina Bifida, Neurological Bladder and Pyelonephrosis

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Every obstetrician at some time in his career has been confronted with an unique problem regarding pregnancy and its management, a situation so unusual that his colleagues can speak with no experience, and textbooks can contribute little to ease his doubtful mind. It is at such times that a review of the literature reveals the true, though often underestimated, value of conscientious case reports of rare conditions. The following observations, brief review of previous cases reported, and the addition of one more case, in detail, have been submitted with the hope that it may enhance our knowledge in the handling of rare obstetrical problems.

Spina bifida, the most common anomaly of the spinal canal, is reported by Sutherland, after studying 12,000 x-rays of the spine, to be present in approximately five per cent of the populace. The fifth lumbar and first sacral vertebrae are most commonly involved, with the first cervical next in order, and the remaining vertebrae at random with a rare defect in the thoracic area. Spina bifida cystica, however, which includes all cases with external masses as well as bony defects, and which is of more clinical importance, is reported as having an incidence of approximately one in every 1000 newborns. The survival rate of these is low, a fortunate (or perhaps unfortunate) few living beyond the first year.

Spina bifida is the result of incomplete fusion of one or more laminae of the vertebral column, with or without extrusion of the spinal cord or its membranes. Spina bifida occulta is usually, though by no means always, seen without any signs or symptoms except a small dimple or soft flat mass at the lower end of the spine, the diagnosis being confirmed by x-ray. This group constitutes by far the greater part of the five per cent incidence reported above.

Spina bifida cystica has three types: 1. meningocele, with herniation of the dura and arachnoid through the vertebral defect, 2. meningo myelocele, in which the spinal cord and nerve roots are part of the meningeal sac, and 3. myelocele, also including cord and nerve root elements, in which the defect involves not just one to three vertebrae, as in the other two types, but nearly the whole spine, with no protruding mass but an inflamed vascular neural strip along the mid-line with spinal fluid immediately beneath. Meningomyelocele is the most

common of the three and, together with myelocele, comprises the most serious anomalies with extensive disability.

Associated deformities include hydrocephalus (which is probably not directly related but due to a second separate developmental defect); club foot, especially of the double equino varus type; abnormal curvatures of the spine; less commonly hare lip, cleft palate, cerebral meningocele and encephalocele, hypospadias, syndactylia, strabismus.

Related anomalies of the nervous system are varied. Paralysis is relatively frequent with meningo-myelocele, less common with meningocele, and unusual in spina bifida occulta. In this last type, even when present, paralysis is much less extensive than with external tumors. There may be weakness or paralysis of the lower extremities, atrophy and weakness of the buttocks or calf muscles, loss of tendon reflexes, especially ankle jerks, trophic ulcers of the perineum or feet, and anesthesia over the perineum, ankles and feet. Weakness of the musculature of the pelvic floor may lead to prolapse of the uterus at puberty. Relaxation of urinary and rectal sphincters is seen with prolapse of the rectal wall. Incontinence without other nervous manifestations may be present, but must be distinguished from common nocturnal enuresis or rarer functional diurnal incontinence.

Neurological bladder, sometimes referred to as "cord bladder," associated with spina bifida of the occult or external variety, is due to defective bladder innervation. Bladder sensation arises principally from the second, third and fourth sacral roots, hence its involvement in certain types of spina bifida is understood. The incidence is debatable, but in one series of 23 patients with spina bifida and enuresis reported from the Harriet Lane Home (Johns Hopkins University), four were proven to have definite neurological bladders, 17 were functional and responded eventually to treatment, and in two the exact nature of the bladder disability was not determined. Other series reported do not differ widely from the above ratio. There may be difficulty in emptying the bladder, residual urine, or complete retention with or without overflow incontinence. These symptoms are due to impaired detrusor function of the bladder. With relaxed vesical sphincter, there is continuous dribbling in a bladder of small capacity with no residual urine.

In those cases with complete retention of urine

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from detrusor paralysis or sphincter spasm, there are several dangers. Ascending urinary tract infection is of paramount importance, the most common infecting organism being the colon bacillus, but staphylococcus, streptococcus and bacillus pyocyaneus, singly or in combination, may be present. The symptom complex is a familiar one, varying in severity and the number of recurrences—the subjective picture not necessarily corresponding to the extent of actual findings on microscopic urine examination. Then, too, the degree of sensitivity to drugs of the same type organism in the same patient may vary widely at different intervals. Chills, fever, malaise, anorexia, convulsions (in infancy), and pyuria are often seen. Albuminuria becomes fairly consistent and hematuria appears.

A second development with a poor prognosis for the future is the gradual appearance of dilated ureters and bilateral hydronephrosis. As the calyces become distended, progressive loss of functioning kidney substance occurs. Renal insufficiency ensues, x-ray studies and kidney function tests giving some estimate of the extent of damage done, with co-existent azotemia, acidosis and hypertension. The life span of the individual is thus gravely shortened.

#### Review of Published Cases

From these observations concerning spina bifida and its crippling sequelae in those few who survive, it is most remarkable that a certain number of newborn girls progress through adolescence, grow to maturity, marry and conceive. According to Slater and Russell of the California Hospital in a recent excellent study and review of the literature, during the past 60 years there were published only five cases concerning pregnancy management in patients with spina bifida. Their added case was the sixth. The following cases, cited by Slater and Russell, are presented with significant factors summarized.

Gilles referred to two cases reported some years previously. His own case, with a lumbar myelocystocele, had a successful spinal operation at age 12. Pregnant for the first time at age 29, she was delivered at eight months gestation of a normal living child by manual dilatation of the cervix and forceps application under chloroform anesthesia. The prenatal course was uneventful except for vomiting. Spontaneous premature labor, lasting some 23 hours with subjective pain, was ended when insufficient dilatation persisted and fetal distress became evident.

Rizzicasa's case was a primipara, age 30, with a generally contracted pelvis who went into spontaneous labor at term. A difficult forceps delivery was done when fetal distress developed, with death of the infant and an injury to the maternal sym-

physis. Three years later a successful spontaneous delivery occurred. X-ray studies showed a spina bifida occulta and abnormalities of the ischium and pubic bone.

Liepert, in 1936, reported the case of a 28-year-old primipara, unmarried. She had had no weakness of her lower extremities until the age of 12, after which gradual paralysis developed. Bladder difficulties had been present for only the last six years. Some eight hours of effective but painless labor were followed by spontaneous delivery of an essentially normal infant.

Slater and Russell's case in 1950, like Liepert's, had paralysis of the lower extremities. There was a spina bifida of L 4 and 5 and a meningo-myelocele, double kidney pelvis and ureter on one side, and a bladder diverticulum. An unsuccessful bladder operation was done four years previously because of urinary incontinence. Bowel control was also lacking. The spine and pelvis were markedly deformed. During pregnancy toxic symptoms developed which progressed in spite of careful management. She was delivered of a healthy infant at approximately 37 weeks by a low cervical cesarian section, and her postoperative course was satisfactory.

#### Our Case Report

E. L., age 24, white married female, presented herself at our office on April 23, 1951, when she was six weeks pregnant. A most attractive girl with an excellent figure, walking with a barely noticeable limp, she discussed her condition with unusual intelligence and understanding. Past history immediately revealed some unique features. Foremost was the fact that she had not urinated in 24 years. She was born with a marked spina bifida, extreme weakness of both lower extremities, bilateral club feet and paralysis of the bladder. There being no hydrocephalus or complete paralysis of the lower extremities, the meningo-myelocele (for such it was) was operated upon 11 hours after birth.

By the age of seven, after some years of muscle training and two operations on her club foot, she was able to walk with average stability. By the age of nine, she was trained meticulously to catheterize herself two or three times daily, which she has done ever since. Her breasts and genitalia developed normally at the expected age; her menses began at age 13 with a 23-day cycle, lasting five days. Married at age 24, she became pregnant three months later. Her last menstrual period was February 28, 1951, and her expected date of confinement was December 5, 1951.

Physical examination revealed no gross abnormalities except a well healed scar 11 x 4 cm. over the lumbo-sacral area, with excellent fascial closure and support and a barely palpable bony defect over



the lower lumbar and first two sacral vertebrae. The R. lower extremity revealed slight atrophy of all muscles, and both feet showed the surgical scars (with good results) of bilateral equino varus club foot. Pelvic measurements were within normal in all diameters.

Pelvic examination revealed a normal early pregnancy. The urethra showed no evidence of trauma. Red blood count was 4,400,000, hemoglobin 84 per cent, Rh positive and Wassermann negative. Urine was negative for sugar with a trace of albumin, microscopic urine 10-15 wbc per HPF, no RBC. Inasmuch as the patient had had repeated but never severe bouts of pyuria throughout the years, and knew well the use and dosage of urinary antiseptics, antibiotics and the limitations of sulfonamides, it was decided to treat these recurrences in the way that had previously given excellent results. Her episodes of pyuria had averaged one or two per month, which incidence continued through the first six months of pregnancy. Her careful method of self-catheterization was also continued, averaging two or three times in 24 hours.

She was placed on restricted salt intake, and dietary measures according to Tompkins' regime and weight gain limitations were explained. Combined calcium and vitamin therapy was ordered, as well as phenobarbital grs. ss t. i. d., the latter as palliation for an understandable nervous reaction.

The following resume, with some omissions, will perhaps most clearly explain her prenatal course and subsequent developments.

4-23-51—Weight 126; blood pressure 122/80; urine, trace albumen, sugar negative, 5-10 wbc per HPF. Six weeks pregnant. Slight nausea and vomiting.

5-21-51—Weight 127; blood pressure 120/84; urine negative. One episode burning and urgency of bladder during month. Slight fever. Treatment, terramycin.

6-18-51—Weight 126; blood pressure 140/82; urine negative. Two bouts of chills and fever during month, responded to terramycin.

7-17-51—Weight 130½; blood pressure 132/86; urine, one plus albumen. Slight urinary distress two or three times. No treatment needed. One episode post-coital spotting. Fetal movement June 30.

8-14-51—Weight 134½; blood pressure 130/80; urine negative. Uterus enlarging normally. No distress.

9-6-51—Weight 137½; blood pressure 150/102; urine, one plus albumen. 40-50 wbc per HPF, two plus bacteria. Two episodes pyuria during three weeks. Treated with gantrisin. No headache, dizziness. Feels well.

9-15-51—Weight 140½; blood pressure 158/

118; urine, three plus albumen; wbc, numerous in clumps, bacteria four plus. Temperature 100.4. No edema. *Admitted to Wesley Hospital, 29 weeks pregnant, pyelocystitis and preeclamptic.* Bed rest, morphine, hypertonic glucose. Improved in four days. Urology and x-ray consultation deemed advisable. Intravenous pyelograms showed diminished kidney function with marked bilateral hydronephrosis. PSP test, 45 per cent in two hours. Blood urea N. was 11, urine culture E. Coli, sensitive to terramycin and chloromycetin only.

9-26-51—Blood pressure 140/96; urine 10-15 wbc.

9-29-51—Urine, numerous wbc, many rbc, albumen three plus, bacteria four plus. Treatment, chloromycetin.

10-5-51—Uterus 23 cm.; blood pressure 160/104, albumin two plus; weight 141¾.

10-13-51—Blood pressure 156/114, slight headache.

10-20-51—Uterus 26.5 cm.; blood pressure 112/90; albumen one plus.

10-27-51—Blood pressure 150/118; urine, albumen three plus, bacteria two plus. Decision to deliver at eight months or sooner if necessary.

11-3-51—Blood pressure 150/118, 35 weeks pregnant. Closed thick cervix. Floating head. Low *transverse cervical cesarean section*. Sodium pentothal induction, cyclopropane. Living male, 4 pounds and 12 ounces, normal, vigorous. Prophylactic chloromycetin.

11-7-51—Postoperative course good until today. Severe right pyelitis with extreme pain. Blood pressure 170/120. Cystoscopic with right ureteral catheter inserted. Uric acid 3.7. Blood urea N. 13, CO<sub>2</sub> 67 volume per cent. Urine culture, E. Coli and *Pseudomonas aeruginosa* (former sensitive to terramycin only, latter to streptomycin only). So treated.

11-7-51—X-ray: spina bifida of fifth lumbar segment with no apparent development of posterior spinous process and a large posterior defect in S 1 and 2. There is a slight list of the spine to the right.

11-13-51—Home, much improved. Mendelamine during alternate 10-day periods.

11-24-51—Three weeks postpartum. Scar healed. No urinary distress. Blood pressure 164/102; urine 150-200 wbc, albumen one plus, Sp. gr. 1.014, PH 5.0.

12-14-51—Six weeks postpartum. Pelvic, normal involuted uterus. Scar healed with keloid. Blood pressure 138/98; weight 127; urine, 1.012, PH 6.0, albumen trace, 5.7 wbc, bacteria three plus, occ. epith. Feels perfectly well. Baby gaining normally.

#### Discussion

1. The courageous decision of this patient to



chance a pregnancy, knowing quite well both the potential hazards to herself and the possibility of delivering an abnormal child, made us most conscious of the viability and survival of her infant. Both the toxemia and urinary tract infection appeared ominous, but in the absence of severe headache, dizziness, visual and gastro intestinal symptoms, the decision was made to wait if possible until eight months gestation. No definite advantage was evident in waiting longer; perhaps even then some irreversible kidney or vascular damage had occurred. The end result, in retrospect, seems to have justified our decision.

2. The patient's description of "burning in the bladder" and urgency in an anatomically non-functioning and supposedly insensitive bladder, seems paradoxical, but in every instance her urine revealed excessive WBC accumulation as well as bacteria. Prior to and in early pregnancy her clinical response to small doses of sulfonamides and as little as 250 mgms. of terramycin t. i. d. for two days, is difficult to explain, when massive doses of chloromycetin, streptomycin and gantrisin were necessary during the third trimester, for certainly the pyuria and pyonephrosis were of long standing. Therapy was based upon urine culture and drug sensitivity tests, so poor choice of therapy was not the factor.

3. Our mode of delivery, cesarean section, seemed only logical with an unengaged vertex and an uneffaced, undilated cervix. The possibility of hyaline membrane disease, adsorption atelectasis, and pneumonia in a premature born by cesarean section was considered, but was too remote to change our decision. Even with a "ripe" cervix and full engagement, the thought of some of the prob-

lems of labor and delivery reviewed above, as well as other unpredictable complications, would have discouraged us from attempting induction and vaginal delivery.

The future for this patient is uncertain, for there is definite renal damage, undoubtedly aggravated by this pregnancy. A subsequent pregnancy would probably end in tragedy, but for the present she is an extremely happy and grateful patient.

#### Summary

Some salient features concerning spina bifida, its definition, description, incidence, and associated deformities are discussed. Co-existent bladder and kidney disability, with origin and symptomatology, is considered. Six previously published cases of spina bifida complicating pregnancy are briefly reviewed. Our own case, further complicated by neurological bladder and bilateral pyelonephrosis, is submitted in some detail.

The author wishes to express his appreciation to his associate, Dr. George E. Cowles; to Dr. Harold F. O'Donnell, urologist; Dr. Newman C. Nash, radiologist, and Dr. Bert E. Stofer, pathologist, for their invaluable assistance.

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# Minimum Standards of Obstetrical Care\*

Committee on Maternal Welfare\*\*

Kansas Medical Society

## Introduction

In 1941, the Committee on Maternal Welfare prepared a pamphlet setting forth certain minimum standards for obstetrical care. This was an attempt to improve the general level of obstetrical care in the state of Kansas by establishing certain diagnostic and therapeutic requirements which all physicians could reasonably be expected to meet.

The present committee has sought to revise this pamphlet in order to keep abreast of those changes in obstetrical management which have developed in the past few years. It is not intended to be a set of directions, nor is it intended to be dictatorial. It is not intended to be exhaustive. There are numerous points of controversy in obstetrical care. There are many other important points upon which there is general agreement, and these points make up what we believe to be the minimum standards for obstetrical care.

One of the functions of the committee is the annual review of cases of maternal mortality. These cases are critically examined according to the information presented, and an attempt is made to assign the responsibility in each case. This particular study gives the members of the committee the opportunity to remind themselves that the loss of a mother rarely develops from any unusual or bizarre complication. In the majority of cases, the abnormality which leads ultimately to the death of the mother originates as a small deviation from a simple and well-known warning, ignored or discounted until an irreversible state develops. The committee feels justified, therefore, in taking every possible opportunity to remind those practicing obstetrics of the considerable responsibility they have assumed.

The normality of obstetrics is its most dangerous feature. It demands that the physician be constantly on the alert. There is a general impression that bearing a child is only a little more difficult than any other excretory process, and the physician's primary purpose is to bestow a benign pat on the head,

sign the birth certificate and help with the clean-up period. Mother Nature does a remarkably fine job, but it was not through her efforts alone that the maternal mortality rate in the United States has been brought to less than one in 1,000 births. Rather it has been a combination of lay and professional education and the alert and rational application of expanding diagnostic and therapeutic measures. The development of these measures is so much a part of our way of the practice of medicine that we often fail to appreciate how important many of them are.

The points which the committee wishes to stress have been set up in chronologic sequence. The pregnant woman is the subject of a dynamic process. The events of her pregnancy and the possible complications must be considered as interrelated problems rather than as a group of isolated and independent circumstances. The opinions contained herein represent not the only possible opinions, nor necessarily the unanimous opinions of the members of the committee, but rather an attempt at a reasonable and proper handling of such problems applicable in any place or condition of practice.

## Prenatal Care

One of the most gratifying results of health education has been the earlier arrival of the pregnant woman at the physician's office. Good prenatal care has resulted from patients seeking it, and patients have sought it because the medical and lay press have stressed the value of close supervision of the woman during pregnancy.

Most laymen and many physicians, however, still consider the act of delivery the only phase of obstetrical care requiring any knowledge or aptitude. Good prenatal care requires much more. It is, unfortunately, not uncommon to hear a multipara, after the completion of a general examination, remark that it is the first time she has had a complete examination with any of her pregnancies. If this patient has had only a cursory physical examination in the past, it seems reasonable to assume that any medical history taken on the occasion of her earlier pregnancies must have been equally cursory. It is just as reasonable to assume, therefore, that that patient has not had adequate medical care. The fact that a mother and infant may survive the pregnancy and delivery is not necessarily a commendation of the attendant, but perhaps a tribute to natural forces. *The first requirement of good obstetrical care is that the patient have a thorough physical*

\*This paper was prepared by the Committee on Maternal Welfare in cooperation with the Division of Maternal and Child Health Services of the Kansas State Board of Health. It will be published in pamphlet form by the Division of Maternal and Child Health Services for distribution to physicians and hospitals.

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*examination and medical history as early in her pregnancy as feasible.*

**Medical History.** The medical history of a pregnant woman need not be different from that of any other patient, except for amplification of those features relative to her endocrine function and child bearing. It includes the usual elements of family background and past medical experiences. Especially there must be emphasis upon any previous pregnancy episodes and some inquiry into the menstrual pattern. Although there will be no obstetrical incidents in the case of a primigravida, the history-taking gives the physician the opportunity to derive some information about the patient's personality and background. It helps to establish a certain amount of rapport and dispel some of the tension which is a constant accompaniment of the patient's first visit to the physician.

In the case of a multigravida, such details as she may recall of her earlier pregnancies may be invaluable. The history of several normal pregnancies is reassuring, but certainly the absence of abnormalities does not preclude the possibility of such developing in the future. In this connection, it is well for a patient to be given simple common sense explanations of any significant events and activities in the course of her pregnancy and delivery, so that she may transmit these as accurately as possible to any subsequent medical consultant. (This might help to offset the amazement the physician sometimes feels when a patient describes some apparently inexplicable course of management followed by a previous physician). The ease with which women get their medical information garbled is equaled only by the ease with which they will accept unnecessary surgical procedures on their pelvic organs.

Those things which are of specific interest in obstetrical patients, then, are the number and course of previous pregnancies, the size and the state of maturity of the infants and any abnormality of the postpartum period. At one time, the history of the use of forceps indicated an abnormal course of labor. Now with the growing use of elective outlet forceps, the history of the use of forceps must be evaluated more carefully in determining abnormality.

If the physician is not acquainted with the patient's social and economic background, he should make that acquaintance in the process of taking the history. Thus he learns a little about how well his instructions may be followed and how to present them so the patient will be adequately impressed. He may find certain domestic factors which will explain symptoms of a psychosomatic nature. The patient's attitude toward her pregnancy, her husband, children or other members of the family is of considerable importance. Specific questioning is es-

sential but, as with any history-taking, the most important information may come spontaneously by allowing the patient to talk out her problems. Some mothers, especially primiparae, may be dewy-eyed and lyrical about pregnancy. Others, especially multiparae, may be in the throes of a serious problem of adjustment to the social, economic and domestic complications of an unexpected (if not unwanted) pregnancy. The latter need the physician's help more than the former.

**Physical Examination.** The physical examination should be basically a thorough general examination with certain specific investigations of interest in relation to the pregnancy. Particularly some form of pelvic mensuration should be carried out. The exact technique of this particular study is less important than the fact that the physician use some method with which he is familiar so that he has a working knowledge of the patient's pelvic capacity. X-ray pelvimetry is helpful in suspected pelvic contractions but can be delayed until the alterations attendant to pregnancy are fairly well established and the infant is of sufficient size that some significant comparison of the presenting part to the pelvic canal can be made. Clinical judgment is still the most important factor in evaluation of the pelvis.

It is desirable to refer the patient to her dentist for adequate care during her pregnancy.

**Laboratory Procedures.** The minimum laboratory work which should be carried out on the initial visit includes a serological test for syphilis, examination for the Rh factor, a blood count—at least a hemoglobin determination—and urinalysis. (It may be well to do elective blood typing at this time if emergency blood typing cannot be readily obtained). The significance of the serological test is obvious. The chief value of the Rh factor determination lies in its warning of possible complication in some cases, albeit a small number. The physician who is confronted with an erythroblastotic infant without being previously warned by available laboratory procedures has not performed his full duty to the patient. Blood counts with particular emphasis on the hemoglobin should be considered in relation to the patient's period of pregnancy, physiologic hydremia and potential blood loss at delivery. It is wise to check the hemoglobin not only in early pregnancy but within a few weeks of term. Obviously any low readings will call for appropriate measures and future checks. Urinalysis should include specific gravity, pH determination, tests for the presence of albumin and sugar and microscopic examination. The urinalysis at any one time is less significant than repeated regular examinations. The first specimen voided in the morning should be the one tested, and the patient should be warned to



cleanse herself in order to avoid contamination of the specimen by vaginal discharge.

Routine x-rays of the chest are a desirable practice but may not be practical in many situations.

**Dietary Instruction.** The patient in early pregnancy should be given certain basic instructions. The most important of these pertains to diet. Individuals below normal weight must be urged to add enough to their intakes to bring their weights up accordingly, whereas the overweight must be discouraged from eating more than basic requirements in order to hold down to a reasonable gain. The patient usually considers dietary restrictions to be in the interests of developing a smaller baby, and it should be stressed that the important factor is her own metabolic problem.

During pregnancy and lactation the nutritional requirements of women are increased considerably. In recent years, many studies have indicated that the prenatal diet affects fetal growth and development as well as the course of pregnancy, labor, delivery and the postpartum period. There is conclusive evidence that the incidence of prematurity, stillbirths, toxemia and congenital defects is markedly higher among infants born to mothers whose diets were inadequate than among those of well-nourished women.

The recommended allowances for protein, minerals and vitamins are increased during pregnancy, but in the first months of pregnancy caloric requirements remain the same as for the nonpregnant woman of moderate activity. During the last half of pregnancy, the caloric needs increase approximately 20 per cent unless weight restriction is indicated. The normal diet should include the following minimum quantities of the Basic Seven food groups daily: one quart of whole pasteurized milk; one to two servings of meat, fish, poultry, or meat alternate; one egg; three servings of vegetables (one green or yellow, one potato); two servings of fruit (one citrus); three servings of whole grain or enriched bread or cereal; and two tablespoons fortified margarine or butter.

During pregnancy and lactation some form of vitamin D should be supplied which provides each mother with at least 400 units of vitamin D daily. During lactation milk should be increased to one and one-half quarts each day; a serving of green or yellow vegetables and a serving of citrus fruit should be added to the above daily requirements. The basic dietary pattern outlined above is adequate for mothers who enter pregnancy in a well-nourished state. For those who are chronically malnourished or undernourished, additional quantities of these foods will be needed.

**Prenatal Visits.** The patient should be instructed

to return at least every four weeks for follow-up examinations which must include blood pressure, weight determination and urinalysis. The frequency of visits should be increased as term approaches since changes in the patient's condition may occur more rapidly.

In order to allay anxiety, an explanation of the progress the patient is making and preparation for labor and delivery should be accomplished during these visits. Symptoms and signs of complications are presented to encourage the reporting of such as early as possible. Discomforts of physiologic origin are diminished by logical explanation. The patient's attitude toward her pregnancy, labor and delivery are considerably affected by the contact she establishes with her physician during these visits. He provides a figure of security which can be occupied by no other person.

**Breast Feeding.** Part of the patient's orientation to pregnancy and motherhood should be an enumeration of the advantages of breast feeding. The physician soon finds that his remarks meet with responses varying from enthusiastic approval to frank rejection. Those mothers who sincerely want to nurse their babies will usually be successful with no more than casual support from their physician. He will probably not accomplish much with those who have decided against it, for they consciously or unconsciously interpose obstructions until a hopeless situation occurs. The patients for whom he can do most are those who are mildly favorable or even doubtful, but who need encouragement or persuasion. The success of breast feeding cannot be foretold; the multiple factors involved—home situation and emotional stability, the basic productive apparatus and metabolic state of the patient, the attitude of her family and physician, the sucking vigor of the baby, previous success or failure at nursing, and so on—mean that a good trial is the only way to determine how well a mother can nurse. The physician who expends a little more time and energy helping to establish a mother and baby on breast feeding will probably save more time and energy in subsequent months by eliminating many feeding problems and enteric infections.

#### Complications of Early Pregnancy

**Nausea and Vomiting.** The majority of patients in early pregnancy experience some degree of gastrointestinal discomfort. This may be a mild and short-termed nausea, a more persistent and annoying nausea without vomiting, nausea with moderate vomiting or protracted vomiting, which can be classified as hyperemesis gravidarum. Vomiting by the average patient is controllable if she can be persuaded to eat small amounts of food frequently.

Mild sedation through the day may be of benefit. Vomiting can often be brought under control with vitamin B complex augmented by pyridoxine hydrochloride. Once the vomiting cycle is broken, sedation and persistent food intake may be utilized to keep the patient under control. The psychogenic factors in this particular problem are obvious, but it is neither right nor reasonable simply to dismiss the patient as "another neurotic female." Encouraging the patient to approach her problem realistically will do much more than brow beating her and attempting to make therapy unpleasant enough to drive her away from her symptoms.

While nausea and vomiting in most patients are annoying and temporarily distressing, they usually do not create an abnormal metabolic state. When the vomiting becomes so severe as to definitely alter the organism, specific corrective measures must be taken. The patient who is vomiting constantly and shows an elevation of temperature and a pulse rate of 100 or over, or ketonuria, can be considered a true case of hyperemesis gravidarum, in need of immediate attention. Such a patient should be treated by deep and prolonged sedation and intravenous fluids (protein hydrolysate, saline and glucose) until the vomiting cycle is interrupted. Isolation from the family in a darkened room and firm but considerate attention are essential. A Levine tube in the stomach with constant suction will stop the vomiting when other measures fail.

**Bleeding.** *Any bleeding that occurs after a pregnancy is established is worthy of investigation without delay.* The character of the initial episode of bleeding may give definite evidence as to its etiology and significance. Too many patients have the idea that it is possible to menstruate regularly during pregnancy. The patient's interpretation of quantity cannot be relied upon. One person will report a hemorrhage which in actuality consists of a scant flow, and the next patient will report a slight flow which turns out to be a serious amount of bleeding. Many patients will say nothing until a week or so has passed, or at least until the family washing and floor scrubbing are done.

The first and most important treatment is bed rest. Mild sedation is of some benefit here, not so much as a means of quieting the bleeding as making the patient more amenable to red rest, since she usually feels no particular inclination to keep herself quiet. Thyroid substance and any one of several schedules of estrogen and progesterone therapy may be utilized. It is not within the scope of this publication to set forth such a schedule. It is to be emphasized that bed rest and sedation are the most important features of management. Bed rest should be continued until no bleeding has occurred for three days. If the patient becomes active sooner

than this, there is likelihood that the bleeding will recur; if she gives herself the benefit of this much rest, the likelihood of her having repeated bouts of bleeding is much reduced.

When the degree of bleeding is suggestive of more than a threatening abortion, it is sometimes advisable to insert a sterile speculum into the vagina under aseptic conditions. This can be done gently, and the exposed cervix may tell the physician whether it is worth while to continue conservative management or if it would be better to assist in the evacuation of the uterus. The problem is the determination of the point of transition from a threatening abortion to an inevitable one.

The condition remains in the threatening class until some pregnancy tissue has been expelled, indicating that continuation of the pregnancy is impossible, or until the bleeding becomes of such a degree that intervention is demanded for the safety of the patient. Here, as in any case of bleeding, avoidance of excessive blood loss is important, and the physician must foresee and forestall obvious dangers by having the patient's blood typed and arranging for blood to be available at a moment's notice. Consultation should be utilized freely in such cases.

**Pain.** Pain related to bleeding in early pregnancy may be helpful in diagnosis. Most patients will recognize the crampy character of pain associated with abortion, comparing it to menstrual cramps or labor pains. A steadier, sharper, more severe pain is that of a rupturing ectopic pregnancy. In this case, the external bleeding is usually less than in abortion. This may be misleading as to the severity of the condition, for internal bleeding may be of a dangerous degree and, as a matter of fact, the sudden onset of shock may be the first indication of trouble. The history of a missed menstrual period and severe abdominal pain should point to ectopic pregnancy until it is positively excluded (surgically if necessary). Diagnostic signs such as Cullen's sign and blood in the cul-de-sac are helpful, but their absence does not eliminate the possibility of this condition.

#### Complications of Late Pregnancy

The latter part of pregnancy presents factors which are productive of specific complications. The patient must be more closely and frequently scrutinized than in early pregnancy.

**Postural Complaints.** Complaints relating to structural stress are much more common because of the fact that the uterus is now an abdominal organ and its rate of growth is much greater. Simple back ache from fatigue is frequent, particularly in multiparas, the lumbosacral and sacroiliac areas being the commonest sites. Well fitting and properly adjusted



maternity supports make life much pleasanter for those individuals who are particularly uncomfortable from such structural problems. The routine use of such garments is probably not necessary since most patients will not accept the discomfort of the garment itself unless it promises relief from greater discomfort which would come from not wearing it.

Varicose veins can be annoying or disabling. Their management graduates from simple postural instructions, through counter-pressure measures in the form of elastic bandages or stockings, to surgical correction which may sometimes be necessary.

The common denominator in both of these conditions is the erect posture which man has so proudly assumed. Whatever benefits he may have received from this position his wife has paid for many times over with her pelvic and lower extremity distress during pregnancy. The obstetrical patient must be urged during the latter months of pregnancy to spend frequent, if short, periods of time lying down with the legs elevated, or at least placing the legs on a level with her pelvis while sitting. The reason this must be emphasized repeatedly is that it is so simple. If rest and postural change could be taken in pill or shot form, the patients would not object at all. But let the obstetrician recommend rest through the day, from time to time, as an important feature in her welfare, and the patient, particularly if she is a multipara, withers him with that "I-wish-you-had-all-those-kids-and-that-house-to-take-care-of" look.

Distressing as these conditions may be, they have no directly adverse effect upon the fetus and are generally not as important in their effect upon the mother as certain other conditions which may develop in the latter weeks of pregnancy. These may be roughly divided into bleeding and metabolic complications.

**Bleeding.** When bleeding develops in late pregnancy the primary consideration must, of necessity, be diagnosis. The first point of diagnosis is not the determination of the exact cause of the bleeding but whether that cause is a minor and temporary condition, or whether it warrants immediate action because of its threat to the mother or the child. *The patient must be investigated with the more dangerous conditions in mind, the diagnosis of the lesser conditions being arrived at only by positive exclusion of the more serious ones.*

Serious bleeding in late pregnancy nearly always stems from some degree of separation of the placenta. This separation may be due to the fact that the placenta lies abnormally close to the cervix, and separates as late changes occur in the cervix. It may be due to spontaneous separation of a normally located placenta. The most important procedure at

this point is typing of the patient's blood so that transfusions can be performed rapidly in case of need. Bed rest should be immediately instituted. It should be terminated only after the infant has been delivered or at such a time as the physician can completely assure himself that the patient's activity will not cause a recurrence of bleeding, and that the patient and the fetus will not be endangered by such activity.

In late pregnancy, vaginal bleeding, which is sudden in onset and painless, should suggest placenta previa. Diagnosis depends upon determining the position of the placenta in relation to the internal os. The amount of bleeding is not a good criterion. One of the simplest and most helpful aids here is an antero-posterior x-ray picture of the abdomen. This may not show the exact location of the placenta, but it may show that it is not in the lower pole. If it can be demonstrated by x-ray that the placenta is in the lower pole of the uterus, a possibly dangerous pelvic examination may be avoided. If positive diagnosis cannot be made by x-ray, and if the degree of bleeding is considered to be dangerous and demanding of immediate intervention, a pelvic examination may be done, but *only if blood is being given or is immediately available for transfusion, and arrangements have been made for immediate interruption of the pregnancy by cesarean section.* Pelvic examination is aimed only at determining the degree of placenta previa. If the condition is found to be of the complete or central type, there is no alternative but to deliver the patient by cesarean section. If the condition is partial or the placenta is of the low-lying type, the physician must decide for himself what course will be the safest for the mother and the fetus. If the degree of bleeding has been slight and the fetus is not yet viable, there may be some justification for temporizing; but the patient must remain at bed rest where facilities are immediately available for delivery.

If the placenta previa is definitely ruled out, one is suspicious of premature separation of the placenta, but this is almost always accompanied by a certain amount of abdominal pain. The classical picture of the acutely distressed patient and the woody hard uterus leaves little doubt as to diagnosis. A problem is posed when the patient is in relatively good condition and the uterus is contracting only intermittently as in the early stages of abruption. This condition allows less temporizing than painless bleeding. In such a situation, if the fetal heart is still active, the physician must make his diagnosis and decision quickly for there is no way of knowing how soon the separation may become incompatible with fetal life. While emergency cesarean section is usually done in order to save the baby, there may be justification for it even when it is known



that the fetus has probably succumbed. If the cervix is long and hard and the likelihood of expulsion of the pregnancy vaginally is slight, it may be necessary to empty the uterus through the abdominal route in order to control the bleeding.

Rupture of the uterus is a condition which is fortunately uncommon but warrants mention. If abdominal pain and bleeding develop and then pain subsides rather suddenly, or even if an apparently normal labor has started and the pains stop suddenly, the likelihood of rupture of the uterus must be recognized. Usually, this condition produces a profound reaction in the patient which indicates that an intra-abdominal emergency exists. Sometimes, the reaction of the patient may lag behind the actual event, and if there is delay in recognizing that the uterus has ruptured, the mother may be lost.

Rupture of the wall of a normal uterus is rare, but the scar of a previous cesarean section is a common site of tearing. A history of previous section, therefore, warrants added vigilance.

**The Toxemias.** This publication makes no attempt to set forth any new classification of the toxemic disorders of late pregnancy; there is a multitude of old ones of varying value. However, it will attempt to stress those features which are indicative of impending trouble. The patient is urged from all sides to see her physician regularly, and *the primary purpose of regular and consistent check-ups is to pick up any findings suggestive of impending toxemia at the earliest possible time.* The classic indications—elevated blood pressure, albuminuria and edema—are well known. The physician's primary obligation is to control the course of the patient's pregnancy, as far as possible, in such a way as to avoid the development of toxemia; and, secondly, to direct or restrict the patient's activities in the proper manner if symptoms of toxemia do develop.

The one element of the triad which is most open to individual interpretation is edema. Edema of the legs and feet is so frequent a finding in otherwise normal pregnancy that its development as an abnormality may be overlooked or its significance too greatly minimized. There is little problem of recognition if the feet and legs are grossly involved or if the hands and face are obviously edematous. There may be more difficulty in interpretation if the patient is seen during a period of water retention which brings a rapid gain in weight without gross edema. This emphasizes the point that the external appearance of edema implies that a significant amount of fluid retention has already occurred. Apart from association with toxemia, edema can be productive of considerable general discomfort, and the patient usually feels considerably relieved when

this fluid is mobilized and eliminated. It is advisable to restrict the patient's salt intake in the latter part of pregnancy with a view toward keeping fluid retention to a minimum. When fluid retention is apparent, diuretics are in order.

Albuminuria is a relatively late development in that some elevation of blood pressure and obvious fluid retention will usually have occurred prior to the finding of albumin in the urine. Albuminuria generally increases in degree and in proportion to the severity of the other findings and may persist for a considerable time after termination of pregnancy and cessation of other findings. A high protein diet throughout pregnancy has a definite prophylactic effect against toxemias, and protein foods should not be restricted in the presence of albuminuria.

Toxemia in pregnancy is generally classified as pre-eclamptic or eclamptic, although this division is not too accurate since the former term implies that eclampsia is bound to follow in the course of time and events. Similarly, pre-eclampsia has been divided into mild and severe types, though these may not be sharply distinguished from each other. The patient showing any degree of toxemia should be placed upon a regimen proper to that degree, but anticipating increasing severity. Principally, she must be put at rest with adequate sedation to insure the procurement of this rest. The importance of protein in the diet must be emphasized, and salt and salty food eliminated. Diuretics should be prescribed, a reasonable program being two grams of ammonium chloride four times a day for four days, followed by a short rest period and repetition of this course if necessary. Blood pressure and urine examinations must be made frequently enough that the physician can anticipate which direction the condition is going. Mild degrees of toxemia will usually respond to such a course of management; the more severe states require individual therapy. If the fetus is beyond the point of viability and the patient fails to respond within three days to the conservative management outlined above, termination of the pregnancy is usually indicated. Fortunately, labor often starts spontaneously, but if it does not and the patient does not seem a suitable candidate for induction, cesarean section is justified.

The management of eclampsia is directed primarily at controlling the convulsive state with sufficient sedation to keep the patient below the convulsive level. For many years, morphine has been the stand-by for this purpose, but the barbiturates have some advantages because of their anti-convulsant action. Magnesium sulphate is another valuable central nervous system depressant, and its use in conjunction with other sedatives is generally accepted.

If some degree of oliguria exists, fluids should be restricted to anticipated fluid loss, that is, approximately 2,000 ccs. a day. Hypertonic glucose solutions have been utilized for many years because of the belief that the edematous central nervous system might be beneficially dehydrated, and continues to be a common form of therapy.

It is not wise to rush in and attempt termination of the pregnancy until the convulsive state is under control, unless continuation of the pregnancy presents an even greater threat. Fetal survival is then so low that the mother should not be subjected to more irritation than she is already experiencing in an attempt to deliver a doubtful baby. When the patient seems to be under control, the mode of delivery warrants the same consideration as for pre-eclampsia, with more tendency toward cesarean section providing a living fetus is still present. Termination of the pregnancy does not relieve one of concern and responsibility, for convulsions may continue—in fact, occur initially—as long as 24 hours after delivery.

#### Management of Labor

**Premature Labor.** The possibility of the fetus surviving if it is expelled after 28 weeks of gestation increases considerably with each week after this so-called period of viability is reached. The management of any attempt on the part of the uterus to empty itself must take the fetus into consideration. If the patient starts having obvious uterine contractions, the probability of her delivering despite efforts to prevent it increases as term is approached. Early in the period of viability, the physician faced with this problem must base management upon his belief that he can or cannot stop the expulsive process. If the condition of the cervix, position of the fetus and other findings indicate that no significant changes have occurred, sufficient sedation should be administered to stop the contractions. If labor continues despite sedation, or if initial examination indicates that irreversible changes have occurred, sedation should then be withheld and delivery effected with the least possible analgesia and anesthesia. *Prematurity is less threat to the infant than narcotization.*

**Premature Rupture of the Membranes.** Occasionally, rupture of the membranes occurs before or as the initial event in labor. This requires immediate checking of the patient, primarily because of the possibility that the cord may prolapse at this time. If prolapse has not occurred, the patient should be kept at bed rest awaiting the onset of labor which, fortunately, usually develops within a matter of hours. If prolapse of the cord has occurred or does occur before the patient is ready for delivery, she must immediately be placed in Trendelenburg posi-

tion in an effort to avoid compression of the cord. Labor can develop and progress satisfactorily with the patient in this position, and it offers the best hope of saving the infant. There is no virtue in attempting replacement of the cord manually.

The possibility of cord prolapse is one of the strongest deterrents against elective induction of labor with mechanical rupture of the membranes, especially in the presence of a floating or poorly engaged head.

The other complication following premature rupture of the membranes is the increased incidence of uterine infection of the mother and neonatal pneumonia in the infant. The possibility of this development increases, of course, as the time lapse between rupture of the membranes and onset of labor increases. It is advisable to administer penicillin prophylactically while waiting for labor to start.

**Conduct of Labor at Term.** The proper management of normal labor at term begins with a diagnosis, and at times it may be difficult to know positively whether or not a patient is actually in labor. Once labor is definitely established, the physician is besieged by the patient and family for a positive time schedule, and if he has not learned the fine art of hedging before, he must learn it now. The pelvic measurements and condition of the soft parts, the frequency, length, and amplitude of the contractions, the size and presentation of the fetus, and the emotional status of the patient are factors in determining the rate of progress in labor. The primary responsibility of the physician lies in his attendance on the patient at sufficiently frequent intervals that he can determine, as well as his clinical judgment allows, her status, the condition of the baby and the probable course of future progress. If he is not in constant attendance, someone capable of keeping him accurately informed must be present at all times. He must be available on short notice, and he must keep in mind at all times his moral and legal responsibility for the patient's welfare.

Adequate examination of a patient in labor includes (1) abdominal palpation to determine the presentation of the fetus and the condition of the uterus, (2) auscultation and evaluation of the fetal heart tones, and (3) rectal examination to determine the degree of effacement and dilation of the cervix, station and position of the presenting part and presence of forewaters if any. Blood pressure, pulse rate and temperature should be determined as soon as the patient is admitted to the hospital or when she is first seen at home by the attendant. Any abnormal findings must be followed up. Vaginal examinations should be omitted unless demanded by some abnormality and should be carried out only under aseptic conditions.



Management of labor today must include some consideration of analgesia and anesthesia. The physician who chooses to administer some medication to his patients for relief of pain in labor must accept a certain fetal mortality as a result of this practice. This is meant chiefly as a warning that close attention must be given to the infant born of any mother who has had some sedation, and it may not be as grim as it sounds. It should be pointed out that some infants can probably attribute their survival to the fact that their mothers did have sedation. At any rate, the amount of medication offered to a given patient should be balanced between a reasonable degree of relief for the mother and minimal effect on the baby. There is no way to predict the degree of effect on a given baby except that obviously large doses are going to cause more trouble. The patient's reaction is not always a good criterion. Many will talk coherently and complain bitterly with their contractions, only to report a complete amnesia for the whole affair the next day. Generally, the physician will have no trouble keeping sedation to a safe level if the patient has been properly oriented and adjusted to the course and activities of labor.

**Deviations of Labor.** These remarks have been concerned with labor progressing at a normal rate. Mention was made earlier of the factors that influenced the rate of labor, and the effect of sedation was deliberately omitted until this point. The delaying effect of early medication has been touched upon, but it warrants mention at least that the rate of progress after sedation occasionally increases so markedly that some credit must be given to the general relaxing effect of the drug on the patient. True, the patient may have been on the point of moving rapidly anyway, but it seems to occur a little too often to be entirely coincidental.

Precipitate labor and delivery give the obstetrician little opportunity for control. In fact, his primary problem is to get to the patient. Once there, he must attempt to control the process to avoid undue trauma to the mother and baby. More distressing for the physician is the problem of uterine inertia. Patients in false labor may have reasonably good contractions with no demonstrable result. So long as the physician can assure the patient and family that true labor has not started, he will not be expected to produce results. When the contractions begin to show some effect in the form of cervical effacement and dilation, a diagnosis of true labor may be made. If the contractions are frequent and strong but with very slow response on the part of the cervix, a state of uterine inertia is said to exist. This will surely test the ability of the obstetrician to handle the patient and her family diplomatically. As long as slow but steady progress is made and

the patient is maintained in good condition with intravenous fluids (including protein hydrolysates) and adequate periods of rest (with sufficient medication to ensure sound sleep for a few hours), no further intervention is justified. If, however, the patient has had an adequate trial of labor and has failed to dilate sufficiently, further examination (e.g. x-ray pelvimetry) must be performed to rule out some previously unsuspected obstructive mechanism. When the condition of the mother or fetus warrants delivery without delay, cesarean section becomes justified. The use of pituitary extract is to be condemned, except in the hands of those specifically trained in its present-day use.

**Induction of Labor.** The induction of labor for purposes of convenience cannot be justified. Only those conditions which demand termination of the pregnancy as a measure of welfare for the mother or baby can be considered proper indications. This implies that the continuation of the pregnancy represents a greater threat than does induction and its possible complications. Even then, conditions must be just right for success in starting labor, i.e., the cervix must be ripe and the uterus irritable. The less prepared the cervix, the more protracted and dangerous will be the process of getting contractions started. The situations calling for induction are serious enough that the physician should, in all such cases, adopt such a procedure only after proper consultation.

#### Management of Delivery

No delivery is so normal that its outcome is a certainty. A normal labor progressing smoothly to a spontaneous delivery may be a simple procedure that can be successfully handled by a policeman in a taxi. The physician's value lies in his ability to conduct this episode with the utmost safety to the principals and to be prepared to meet complications, however they may develop. The total responsibility is his, and no part of it can be completely transferred to any assistant when things go badly.

**Anesthesia.** At the time of delivery, the type and degree of anesthesia must be determined by the condition of the patient, the available anesthetic agents, the ability of the attendant in charge of anesthesia, and the type and degree of intervention anticipated by the operator. In order of safety for the mother and baby, the types of anesthesia are local, regional and general. It does not necessarily follow that the safest delivery is one conducted without any anesthetic. Lack of control over the birth process may constitute greater danger than any introduced by an anesthetic agent.

**Conduct of Delivery.** The obstetrician must conduct the delivery in the safest possible environ-



ment. This means, of course, that aseptic technique must be utilized consistently. Deliveries should be accomplished in properly regulated hospitals whenever possible. If such facilities are not available, a home delivery should be conducted with the same respect for asepsis as would be required in a hospital. The neonatal care of the infant must be of the same caliber, whether it be in the home or the hospital nursery.

As the delivery progresses, the obstetrician must anticipate the ability of the vaginal orifice to accommodate the passenger. If it is apparent that the baby will cause some degree of laceration, an adequate episiotomy should be made. It is no credit to the physician that he delivers the child without incision and then has to repair an unexpected tear. It is better service to the patient to perform an episiotomy which can be carefully and anatomically repaired than to permit a laceration that becomes a major surgical concern.

The use of forceps (other than the simplest, outlet "shoe-horn" variety) is one of the most important and one of the most dangerous aspects of delivery. Such use implies some abnormality of size, position or presentation, and should never be entered into without adequate consultation and preparation. It is not within the scope of this paper to consider the various types of forceps and their indications. It may be said, however, that their use should not be considered unless the patient has been in active labor, in the second stage, for two hours if a primipara, or one hour if a multipara, without demonstrable progress in the form of change of position or station. Hasty delivery for fetal indications is rarely justified. Although frequent checking of the fetal heart tones in labor is essential, fluctuations of rate and rhythm must be evaluated cautiously lest they press one to injudicious action.

As soon as the infant's head is delivered, the air passages must be cleared so that the initial inspiration will be unobstructed. This can generally be accomplished satisfactorily with a bulb syringe. If the cord is entwined around the baby's neck, it can usually be loosened gently and slipped over the head or along the body as it emerges, only rarely requiring immediate clamping and cutting before the delivery can be completed. Generally, delivery of the head is followed without particular difficulty by the emergence of the shoulders. If, however, the anterior shoulder does not slip out easily, the danger of damage to the brachial plexus must be kept in mind. Fundal pressure is a much safer mechanism for delivery of the shoulders than traction on the head. As soon as the infant is delivered, he should be wrapped in a blanket and placed in a preheated incubator or crib.

**Premature Delivery.** The delivery of a prema-

ture infant imposes certain particular responsibilities on the physician. Labor must be conducted with little or (preferably) no analgesia. If the danger of narcosis to a premature baby is explained to the mother, she will readily accept the usual discomfort. The small size of the infant and lack of sedation increases the possibility of a precipitate second stage, so the course of labor must be attended more closely by the physician.

It should be kept in mind that this organism which is being abruptly forced into an untimely independent existence is more delicate in structure and functional balance than the term baby. The delivery should be conducted with local, regional or the minimum of general anesthesia, if any is required. Greater care must be taken in the delivery process. If the vaginal orifice is tight, an adequate episiotomy is desirable in order to lessen the pressure and subsequent release on the infant's head as it passes through. Warmth should be applied immediately while waiting for the cord pulse to stop. Oxygen must be administered more readily and consistently with premature babies since they are more sensitive to oxygen deprivation. Strict attention must be given to clearing the air passages since the premature infant is less able to clear these passages himself.

**Breech Delivery.** Breech presentation may pose some difficult decisions for the obstetrician. Upon discovery of this presentation as the patient nears term, he will be tempted to perform an external version. He will do well at this point to remember that (1) version may occur spontaneously at a later time, (2) indication of fetal distress will obviously prohibit further effort to turn the baby, and (3) an infant which can be turned easily will probably turn back just as easily since the condition causing the breech to be at the inlet will persist. The breech presentation, therefore, may better be left alone.

The chief source of grief at the time of delivery is the hasty attempt to extract the infant through an insufficiently dilated cervix. The multipara with a breech, if she has had a normal vaginal delivery previously, will probably progress to an uncomplicated delivery if the obstetrician does not interfere too quickly or forcibly. A primigravida with normal pelvic capacity and an infant of apparently normal size will also reach a happy termination if the attendant is not too impatient.

An adequate episiotomy is necessary, and the obstetrician must be capable of using forceps on the after-coming head if the need develops. Pressure on the cord as the trunk descends is an over-emphasized danger which should not press the physician to hasten the extraction unnecessarily. Once the infant's mouth is free and cleared of fluid, there is

no need for haste. Since traction on the trunk is most dangerous if the neck is twisted or angulated, the location and relationship of the head must be constantly visualized.

The most difficult problem of evaluation occurs in the mother with small pelvic measurements. The after-coming head is an unknown quantity until it is actually in the birth canal, and this may be too late to avoid serious trauma to the mother and baby—and obstetrician. The primipara with border line measurements and the occasional multipara with a poor pelvis or history of a dystocia may be candidates for cesarean section in the interests of the baby. The comforts of consultation are greatly beneficial to the obstetrician's peace of mind.

#### Care of the Newborn

**Delivery Room Attention.** The physician has certain responsibilities to the newborn infant, particularly to initiate respiration as rapidly as possible without producing trauma. Respiration is best established by gentle skin massage after a clean airway has been established by gentle suction; vigorous manipulation is to be avoided. The baby should lie with the head down slightly so that nasopharyngeal secretions will drain out.

The asphyxiated infant who refuses to breathe may pose a severe problem, as anoxia at this time can lead to life-long handicap from mental deficiency, cerebral palsy, blindness or deafness. Respiratory stimulants are ineffective since the anoxic respiratory center is refractory to them and they may be the final insult which causes a respiratory center to cease functioning completely. The imperative need is to get oxygen to the brain. If an initial gasp has produced some expansion of the lungs, gentle artificial respiration with administration of 100 per cent oxygen will effect this purpose. If no initial gasp occurs, it will be necessary to clear the passages by suction through an endotracheal catheter followed by introduction of oxygen under positive pressure through the catheter. Mouth-to-mouth breathing is a poor substitute but obviously better than nothing. Insufflation of the lungs always carries some risk for the baby and should receive the physician's personal attention. Removal of swallowed secretions by gastric suction eliminates this source of fluid that might be aspirated.

Some babies require closer attention than the average newborn. Complications of labor and pregnancy, i.e., premature delivery, breech presentation, cesarean section, multiple delivery, Rh sensitization, premature separation of the placenta, toxemia and diabetes produce babies who depart from normal physiology and show a tendency to die unexpectedly. These babies should be placed at once in heated,

humidified incubators with flowing oxygen and, whenever possible, should be given special nursing attention. When the birth of one of these babies is expected, it is wise to have present in the delivery room another physician who can devote his full attention to the child even if the mother should be in difficulty.

**Nursery Attention.** Once the child's independence is established, the eyes should be treated with silver nitrate, as required by law, and immediately flushed with saline. If the child is to be introduced into a nursery, he must be adequately identified.

The newborn should be allowed to rest quietly for a few hours after delivery, and should receive a minimum of handling thereafter. The initial cleansing should gently remove only gross blood and mucus, leaving the bactericidal vernix in place. Weighing and measuring the newborn infant, checking the temperature (and, incidentally, the patency of the anus), and noting the skin color and texture and condition of the head and extremities should be routine activities for which the nursery attendant is responsible. This does not relieve the physician of the responsibility of a thorough examination of the infant as soon as practical after delivery. It is good medical practice and avoids the embarrassment of having parents discover abnormalities which have been overlooked.

Size is not always a good criterion of a baby's maturity. Mild heat should be applied until the ability to maintain body temperature is established, or until any fall in temperature attendant to delivery is corrected. A lusty cry at delivery is a heartening sound, but the most vigorous baby warrants close observation for the first few hours for evidence of respiratory difficulty, central nervous system defects or circulatory insufficiency.

**Care of the Premature.** The most important single factor in maintaining the premature after he is started is attentive nursing care. He should be transferred immediately to an incubator, and handling must be limited to that which is necessary to the maintenance of life. No infant's start should be jeopardized by such non-essential activities and exposures as weighing, measuring, or displaying for the benefit of the family. There is no need to disturb the infant for feeding in less than 24 hours.

The salvage of these children represents one of the greatest challenges in the field of obstetrics, and the obstetrician must take the primary responsibility since the pediatrician (if he is a separate individual) will probably not see the child until the most critical phase is past. Fetal mortality has not taken the same gratifying drop that maternal mortality has, but when it does it will be largely because these prematures and immature babies are being saved.



### Management of the Third Stage

**Delivery of Placenta.** Firm contraction of the uterus after expulsion of the fetus can be made more certain by the administration of an oxytocic, preferably a preparation of ergot, as soon as it is evident that there will be no impediment to the completion of the delivery (and that it is not an unexpected multiple pregnancy). The only objection to the use of such a drug is the slightly increased incidence of retained placenta, but this can be avoided by attention to the activity of the uterus after the oxytocic is given and by fundal pressure at the proper time. The placenta should be inspected to determine whether it is intact, but a more practical indicator is the character of bleeding which follows. If the uterus remains firm and bleeding is slight, one can be reasonably certain that there is no retained tissue or that if there is any, it is better left to pass spontaneously unless the development of bleeding warrants intervention. This applies to retention of the entire placenta as well. As long as there is no excessive bleeding, it may be better to wait than to attempt manual removal.

**Bleeding.** During and following the third stage, the closest attention must be paid to the amount of blood loss. If there has been an operative delivery, or if bleeding continues at a faster than normal rate despite a well contracted uterus, the entire circumference of the cervix should be visualized. Lacerations should be repaired immediately. Packing the vagina without proper inspection of the vault and cervix may result in the damming up of blood and a degree of hemorrhage unsuspected until the patient begins to show secondary reactions. The episiotomy should be repaired without delay, but the blood loss here is rarely dangerous unless an unusually vascular area has been entered. It cannot be too strongly emphasized that here, as in the bleeding complications earlier in pregnancy, the obstetrician must constantly guard against underestimating blood loss. If this can be worse at one time than another, it is at that time when blood is not available or when its procurement is slow and difficult.

### The Postpartum Period

The patient should be kept under constant observation for bleeding for at least one hour after delivery. This also assures her of attention if she should vomit and aspirate in the process of awakening. Delayed hemorrhage is fortunately not com-

mon, but the possibility of dangerous bleeding must be considered for at least 10 days.

Next to bleeding, the greatest danger in the postpartum period is infection. This, obviously, is most commonly of uterine origin. Urinary tract infections are not uncommon, but pelvic inflammations occur usually by the fourth postpartum day, while urinary infections are often delayed until the seventh or eighth day or later. The latter usually bring characteristic symptoms, but may show no response except fever and pyuria. Breast infections in nursing mothers usually do not develop until the second or third week.

The primary point of consideration is that the patient must be watched closely enough to catch the earliest indications of any complication. Second, a diagnosis should be made if evidence of infection develops. Third, proper antibiotic or chemotherapy must be initiated. This does not mean that complicated diagnostic studies are mandatory, but simply that one should examine the patient and then treat her rather than using the simpler expedient of shotgun therapy.

The physician too often considers his postpartum responsibilities to end when the patient leaves the hospital or decides she is able to resume her household activities. At least one check-up six or eight weeks postpartum is the absolute minimum of after care. This extent of follow-up, while better than none, overlooks the fact that the pelvic tissues do not return to their physiologic, non-pregnant state until some weeks later. The fact that most patients now expect a six-weeks check-up is a tribute to health education in recent years. The expectation of further check-ups should be impressed upon them in the future.

### Consultations

It should be evident from these remarks that the committee feels that one of the most important factors in providing good obstetrical care is that the physician should realize and respect his limitations. It is no reflection upon his training or ability that he will at times need the advice and assistance of a colleague. The principal desire of any physician should be to provide the best possible care for his patients, and this may require the consideration of opinions other than his own. Obstetrics is the ideal branch of practice for the physician to appreciate and utilize consultation, for it is the only one in which two lives may be at stake at once.



## PRESIDENT'S PAGE

Dear Doctor:

We have just finished a rather careful reading of the first volume of the report of the Magnuson committee. We have the very definite feeling that it leaves much to be desired. The committee undoubtedly has done a lot of work, spent a lot of money, and, to a greater or lesser degree, honestly tried to develop some facts and figures with regard to the nation's health.

Public meetings were held in key cities, at which time various individuals were asked to attend and express themselves. We attended one such meeting and decidedly were not impressed with the quality of the talent as it appeared. Some of the presentations were valuable. Too many made one wonder just how silly supposedly intelligent people can become after exposure to the dizzy doctrines of the past administration. The experience was enlightening but not heartening.

There seems to be much difference of opinion in the estimates of newspapers and commentators pro and con as regards the report. We believe that there are a few comments and conclusions that may seem justified. First of all, we fail to find where anything new has been developed or brought into the picture. The second conclusion which occurs to us is that throughout the whole text there still occurs and recurs consistently the same old refrain—federal aid.

Even more regrettable than the above is the persistent teaching of the spurious philosophy of the government owing everybody just about everything. A democracy endows its citizens with certain inalienable rights, not the least of which is the right to make one's own living and to provide for one's own welfare and future. These and other basic concepts have been the life-blood of this country throughout its existence. We fail to find any mention of anything so practical in this report.

Undoubtedly the report will be used by the do-gooders and the socialists to prove a great variety of points in their program. We hope it will not be taken seriously by the administration and thinking Americans. We are also definitely of the opinion that the FSA and the OASI, which are a part of the picture and which have repeatedly been pointed to as the greatest swindle ever perpetrated on the American people, should be terminated. If necessary, an agency should be set up in their place with at least a semblance of actuarial sense.

Mr. Oscar Ewing is out of the picture. Steps should be taken to insure that he will be closely followed by Falk, Cohen, Altmeyer, Davis, Kingsley, and others of that stripe.

Sincerely,

A handwritten signature in dark ink, appearing to read "Warren E. Hearnes". The signature is fluid and cursive, with a large, sweeping initial "W" and a long, horizontal flourish extending to the right.

## EDITORIAL COMMENT

### Your School of Medicine

*Editor's Note. The following article was prepared by Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, and presented for publication in this issue of the Journal at the request of the president of the Kansas Medical Society. The Society is grateful to Dr. Wescoe for his enthusiastic co-operation and submits to the physicians of this state the story of the School of Medicine, its recent progress, and its future plans. Should additional copies of this article be of interest, they may be obtained by writing the Society, 315 West Fourth Street, Topeka.*

It is a great personal pleasure for me to be able to present this report to acquaint you with facts and figures showing just what your University of Kansas Medical Center is doing to discharge its three primary obligations—education, medical service, and research—and to point out what remains to be done.

On February 18, 1949, the Honorable Frank Carlson, then governor of Kansas, signed the bill "Rural Health Program for Kansas," which had been passed by both houses of the legislature. It was the purpose of that bill to provide major expansion of the University of Kansas Medical Center in order that more doctors, nurses, medical technicians and other ancillary personnel might be trained to alleviate a serious and growing shortage of such personnel in the state. A sum of \$3,862,560 was appropriated for such expansion. All but one of the major buildings provided for in that bill have been completed or are now in the process of construction; the psychiatry unit remains to be constructed, but its building plans are in the final stage.

This Rural Health Program has become of major historical interest not only in Kansas but in the entire United States. The forward-looking attitude of Kansas legislators has focused the eyes of the nation upon this state. This one bill has literally made the name Kansas synonymous with medical progress throughout the United States. The health program it outlines has served as a stimulus for many other states to plan toward the solution of their rural health problems. That the program has been successful is an acknowledged fact.

At this time, approximately four years after the passage of that bill, a report is due the people of Kansas as to what the Rural Health Program has done for Kansas and how, looking ahead, we should be planning.

#### Medical Education

Better medical care for the people of Kansas depends, as it does for all people, upon the training

and knowledge of the medical team. The University of Kansas Medical Center is your school for training new medical teams and maintaining the proficiency of those now in practice.

The University of Kansas School of Medicine is now a national leader in medical education. In 1951-52 it was third\* in the United States in the total number of personnel trained by a medical school faculty. Further, it ranked second\*\* in the number of practicing physicians receiving further training through refresher and circuit courses out of 79 United States and 11 Canadian medical schools.†

#### Increased Enrollments

The number of medical students in the University of Kansas School of Medicine has increased progressively since 1949. There are now 450 students enrolled for medical degrees. This figure contrasts to the 348 enrolled at a similar time four years ago.

At the time the Rural Health Bill was passed, the promise was made that medical student enrollment would be increased from 80 to 100 students per class. The School of Medicine has exceeded that promise. This year there are 121 freshman medical students, of which number 114 come from the state of Kansas. Students from Kansas account for somewhat more than 93 per cent of the enrollment in the freshman class. Further, it should be mentioned that in the 78 medical schools in the United States outside Kansas, there are only 15 Kansans enrolled in freshman classes. The University of Kansas School of Medicine, therefore, is taking care of 90 per cent of the students of Kansas who have the necessary qualifications to study medicine. There is no doubt that most or all of these 15 persons from Kansas who are attending medical schools outside the state are doing so by their own choice.

Modern medical care requires not only the services provided by doctors but also the important professional and technical services provided by nurses, medical technicians, x-ray technicians, dietitians, physical therapists, and others. The K. U. Medical Center has training programs for these additional students, and enrollments in these fields also have increased. In 1949, nurses and technical medical trainees totalled 212. This number has increased to 250 in 1952.

All told, counting medical students, doctors undergoing further training, nurses, and the other tech-

\*The first two were the University of Minnesota and the University of Michigan.

\*\*The University of Michigan was first.

†Journal of the American Medical Association (Educational Number) 150:112 (Table 11) Sept. 13, 1952.

nical personnel necessary to medical care and rehabilitation, 2,172 persons were enrolled in 1952, an increase of 621 over the 1,551 enrolled in 1949.

Of what do these totals consist? The following table gives the complete breakdown:

DETAILED TABLE OF ENROLLMENTS

	1949	1952
Medical students .....	348	450
Resident physicians .....	51	69
Interns .....	22	19
Physicians in postgraduate courses	918	1,382
Nursing students .....	140	162*
Dietetic students .....	13	20
Medical technologists .....	17	11
X-ray technicians .....	3	4
Physical therapy students.....	23	12
Occupational therapy students.....	16	35
Speech correctionists, students ....	....	7**
Teacher training for hearing and speech .....	....	1
Totals .....	1,551	2,172

\* Including practical nursing students, a course initiated in 1951.

\*\* Course initiated in this year.

Surveys by the Association of American Medical Colleges prove that physicians are more likely to establish practice in the states in which they receive their medical training. The greater number of medical students, therefore, means a greater number of physicians, surgeons, and teachers for Kansas in years to come.

#### Expanded Postgraduate Program

The likelihood of Kansas medical graduates staying in Kansas is even greater when opportunities for continuing professional study are made available to practicing physicians. Since the passage of the Rural Health Bill, the University of Kansas School of Medicine has embarked upon an enlarged program of postgraduate medical education. This program offered instruction to almost 1,400 physicians in 1951-52.

Very recently, a Department of Postgraduate Medicine has been established so that the School of Medicine now has for the first time a department, with a full-time chairman, devoted to the particular educational needs of practicing physicians.

#### Attracted International Attention to Kansas

The postgraduate training program has attracted much favorable attention to Kansas, not only from other states but from other countries as well. Medical school deans from Canada, New Zealand, Thailand, Burma, India, and Iran have visited the University of Kansas Medical Center as one of the few

schools in the United States they *wanted* to visit in order to find out more about this postgraduate educational program.

Of what does this postgraduate program consist? Practicing physicians who want to learn more can receive training from the University of Kansas School of Medicine in any of the following ways:

1. Two- to six-day refresher courses are held in Kansas City at the K. U. Medical Center, beginning in October each year and continuing through April. By April, 1953, 15 such refresher courses for physicians will have been held during the present academic year. Similar courses in the year 1951-52 were attended by 768 doctors. Refresher courses are also scheduled for nurses and medical technicians.

2. One-day-a-week or one-day-a-month continuation courses extending over several weeks or months are held at the K. U. Medical Center. From October, 1952, to April, 1953, four of these courses are scheduled. In 1951-52, 119 doctors attended.

3. Circuit courses are taken out to the cities of Kansas every month, December through April. A team of two or three K. U. Medical Center faculty doctors, together with a field representative, ride the circuit in a car loaded with projectors, screens, notebooks and other teaching materials, putting on an intensive course in each town. Eight carefully selected cities throughout Kansas are the sites for these courses, selected so that the instruction will be easily available to all Kansas doctors. This is taking information about medical advances right out to physicians who cannot leave their practices long enough to come to Kansas City for longer courses. In the academic year 1951-52, 474 doctors attended circuit courses.

#### Medical Service

In order to teach physicians, medical students, and other medical personnel, many patients with a variety of diseases are needed. In fact, one measure of the effectiveness of a medical teaching program is the number of patients available for study by the students.

In 1952, 12,313 patients from 103 Kansas counties were admitted to the K. U. Medical Center, each spending an average of 12 days.

In addition, the outpatient clinics recorded 77,725 patient visits in 1952. These walking patients give students experience in an office-type practice and provide necessary knowledge of ailments not requiring hospitalization.

#### Research Vital

But patient care and teaching are not enough. Research in medicine is vital for the continued discovery of new ways to improve medical care and shorten illness. Research is necessary and vital to



the University of Kansas Medical Center, as to any medical school, not only for the direct products of research—improved treatments and methods for discovering disease—but also to provide the atmosphere which is stimulating to students and faculty members alike. Medicine is not a trade—it is a way of life, a perpetual curiosity about the nature of disease and how to prevent and cure it. The active research program at the K. U. Medical Center makes the educational program more effective and adds to our knowledge, enabling us to give better medical care in Kansas.

An active research program and adequate research facilities serve also the practical purpose of attracting the caliber of teachers needed in a great medical school. Were research activities lacking in the K. U. Medical Center, many of our most effective teachers would go elsewhere, where such facilities and activity could be found.

Forty-nine individual research projects are now under way at the University of Kansas Medical School. Cancer alone accounts for nine of the studies. All sorts of approaches are being used to find out more about this killer—what goes wrong initially with body cells to change them into wildly growing cancer cells, what the various body chemicals have to do with starting and stopping cancer growth, how to diagnose cancer earlier when it is all in one place and curable. Such special instruments as the electron microscope are used to study the fine points of cancer cells with magnifications of 100,000 times. Every conceivable effort is being made to learn more about this deadly disease.

Research on polio at the University of Kansas Medical Center has made a major contribution to the international pool of medical knowledge of this disease. The K. U. School of Medicine is one of the three schools in the country where viruses causing polio have been discovered and identified. Only by finding all the variations of virus that cause this disease can a vaccine for its prevention be made.

Heart research and its practical applications are also being studied. Yours was one of the first institutions where disease-tightened heart valves could be opened and where heart malformations occurring in some babies could be corrected surgically. Six heart disease research projects are now under way

#### Interest on the Investment

There are many interesting figures that point out the success of the Rural Health Program. These can be summarized briefly by the following facts: (1) More of our graduates are remaining in Kansas to become Kansas doctors; (2) more physicians are settling in small communities; (3) Kansas is gaining physicians. The concrete figures are these:

1. Of the 2,131 living alumni of your University of Kansas School of Medicine graduated before the Rural Health Program became effective, 742, or 35 per cent, are practicing in Kansas. There were 84 young doctors in the first class (1951) graduated after that program was instituted. Of these, 49 have now settled to practice; the remaining 35 are completing internships or are in military service. Of the 49, 42, or 86 per cent, are settled in Kansas. Admittedly these latter figures are small but the

#### Service Separations

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

Niles A. Borop, Jr., M.D.  
U. S. Army Hospital  
Camp Carson, Colorado  
Bernard A. Brungardt, M.D.  
137 North 9th Street  
Salina, Kansas  
Herbert Bunker, Jr., M.D.  
U. S. Army Hospital  
Fort Riley, Kansas  
James H. Enns, M.D.  
211 S. E. 4th  
Newton, Kansas  
Charles C. Gilkey, M.D.  
1731 Clay Street  
Topeka, Kansas  
Charles R. Hopper, M.D.  
172 Artillery Loop  
Fort Sam Houston, Texas

Edwin R. King, M.D.  
1708 First Street, N.W.  
Washington 1, D. C.  
Robert V. Kirk, M.D.  
248 West 12th Street  
Horton, Kansas  
Ward A. McClanahan, M.D.  
1425½ Buchanan  
Topeka, Kansas  
Arthur W. McMahon, Jr., M.D.  
Winter V.A. Hospital  
Topeka, Kansas  
Don R. Miller, M.D.  
1847 Oakland  
Kansas City, Kansas  
William J. Reals, M.D.  
Wichita Hospital  
Wichita, Kansas

Alex Scott, M.D.  
1904 L. Street  
Belleville, Kansas  
Joseph E. Seitz, M.D.  
Wakeeney, Kansas  
Dana A. Tompkins, M.D.  
Route 2  
Bonner Springs, Kansas  
Richard C. Tozer, M.D.  
Winter V.A. Hospital  
Topeka, Kansas  
John L. Weaver, M.D.  
4206 Prairie Lane  
Mission, Kansas  
Robert Weimer, M.D.  
206 Third Street  
Fort Leavenworth, Kansas

trend is unmistakable. *We are holding our graduates now.*

2. In 1950 and 1951, 79 physicians began practice in Kansas towns with populations of 1,500 or less. This was the first reversal of the trend away from rural practices in the past 50 years.

3. In the years 1900 to 1950, Kansas consistently lost more physicians than it gained. In 1950 this half-century trend was finally reversed. In that year, instead of losing, Kansas gained 100 physicians. This gain was continued in 1951 with the same number.

These gains are even more dramatic when considered against the background of national events. Gains were registered despite the inroads of the military services on civilian physicians. Had it not been for the large demands of the military, Kansas would have profited even more.

#### Mental Health Program

Very recently, plans have been laid by the School of Medicine and the Board of Social Welfare to start a preceptorship program in the mental hospitals of Kansas. Each senior medical student will spend six weeks working and learning in a state mental hospital; groups of 15 students will be rotated so that the hospitals will be staffed the year around. By showing students the opportunities and problems that exist in these institutions, we will provide a stimulus for filling the trained personnel gap that exists.

This program, too, is a matter of interest returned on the investment.

#### The Future

A great deal has been accomplished for Kansans in the past four years with the original 3.8 million dollars, a sum that was conceded at that time to be insufficient to complete the University Medical Center. We feel a duty to point out that a great deal of momentum has been generated, a momentum that, if continued, makes possible even greater progress in meeting the health needs of the people of Kansas. This momentum cannot now be allowed to spend itself.

In order that gains may be consolidated and that the academic program may be carried on successfully, certain additions to the present physical plant will have to be made. These critical additions are outlined below.

1. *An Addition to the Administration Building for Educational Services.* This building would include facilities for the library of the School of Medicine, our most urgent need.

For some time the library facilities on the Kansas City campus have been inadequate for medical students, nurses and other technical students. Since 1941 and earlier, the library of the University of

Kansas School of Medicine has ranked consistently in the lower fourth of the medical school libraries of the United States. This situation has deteriorated even further because of a tremendously increased student load without any increase in library facilities, books, or personnel. When compared with other Big Seven medical schools, the University of Kansas is at the top of the list with but one exception—its library is at the very bottom.

The University of Kansas has now been fortunate enough to obtain the services of one of the country's outstanding librarians. In consultation with him, we have estimated the necessary long range library requirements for this institution.

In addition, this wing would contain necessary facilities for clinical laboratories as well as adequate quarters for housing interns. New intern quarters would allow the opening of their present rooms into an income-producing hospital ward.

It is a reasonable estimate that a sum of \$1,000,000 would suffice to construct this very necessary addition.

2. *The First Year Facilities.* Adequate training for a first year medical class of more than 100 students is nearly impossible with the present facilities available on the Lawrence campus for the teaching of anatomy, biochemistry, and physiology. Conditions are such that classes must be taught in split semesters and not by the progressive rotation which is accepted by all medical educators as being the best curriculum. Anatomy classes, for example, are being taught in some instances in an area which is really a corridor of Haworth Hall.

For adequate teaching, it is essential that these physical inadequacies be corrected. An addition to the Medical Sciences Building of the University of Kansas Medical Center is needed. It is felt that the cost of the establishment of this facility would be \$1,250,000. With this facility in operation, 120 first year students per year can be trained adequately, and Kansas will have a consolidated school of medicine.

3. *Facilities for Neurological Patients.* At present, although we have an outstanding group of neurosurgeons and neurologists, there is no adequately equipped ward for the care of neurological patients. These facilities are becoming more important each year because of the increasingly aged population. An adequate neurological and neurosurgical service, from the standpoint of early diagnosis and rehabilitation, is important to the public and mental health of Kansas, a state with a large number of older people.

In order that a complete neurological and neurosurgical service be possible in the K. U. Medical School, it is necessary that two floors be added to



the presently planned psychiatry building, these at an approximate cost of \$300,000.

4. *Power Plant.* When these facilities have been completed, it will be necessary that the present power plant be expanded. At that time a power plant should be built which will adequately fill the needs of the K. U. Medical Center for as long a time as can now be foreseen. It is the estimate of the state architect that such expansion will cost approximately \$175,000.

These are the facts. A great deal has been accomplished. Some remains to be done. The interest on the original investment continues to pour in for the better health of citizens of Kansas. An investment of \$2,725,000 will serve to give Kansas a consolidated medical school and an unsurpassed university medical center.

During the past four years Kansas has set the pace for the nation in developments inevitably leading to better medical care. The pace with which the Kansas program is to be pushed forward must be set by our citizens and our legislature.

### Annual Mid-West Cancer Conference

The Fifth Annual Mid-West Cancer Conference, sponsored jointly by the Committee on Control of Cancer of the Kansas Medical Society and the Kansas Division of the American Cancer Society, will be held at the Broadview Hotel, Wichita, on April 2 and 3.

The guest speakers, all noted specialists in the fields of practice in which cancer is a problem, are as follows: Dr. William Boyd, University of British Columbia, Vancouver, B. C.; Dr. Paul C. Bucy, professor of neurology, University of Illinois College of Medicine; Dr. Ernest M. Daland, chief of staff of Pondville Hospital, Walpole, Massachusetts; Dr. Juan A. Del Regato, director of Penrose Cancer Hospital, Colorado Springs; Dr. Cushman D. Haagen, associate professor of clinical surgery, Columbia University, New York; Dr. Henry S. Kaplan, professor of radiology, Stanford University Hospitals, San Francisco; Dr. Cornelius P. Rhodes, director of Memorial Hospital, New York; Dr. Isidore Snapper, director of medical education, Mt. Sinai Hospital, New York.

A banquet will be the feature of the program for the evening of April 2. One of the scientific speakers, Dr. Rhodes, will address the group on "Horizons in Cancer Research." The wives of physicians attending the conference are invited to attend the evening session and will be entertained at other times by members of the Woman's Auxiliary to the Sedgwick County Medical Society.

Those planning to attend are urged to make hotel

reservations immediately, direct with the hotel of their choice in Wichita. Registration for the conference will begin at four o'clock on Wednesday, April 1, and continue until ten o'clock that evening. The desk will also be open through the days of the conference. No registration fee will be charged.

This annual conference is growing in prestige with each presentation, and is now anticipated with pleasure by a large number of Kansas physicians. The program is of interest to specialist and general practitioner alike, and is one which is deserving of the support of all.

### How to Win Patients and Influence Doctors

*Editor's Note. The following is a condensation of a talk presented by Dr. Alfred R. Sugg, Ada, Oklahoma, to the Kansas Medical Assistants' Society at its annual convention, April 28, 1952. It is printed here at the suggestion of physicians who heard the paper and felt that others would be interested in Dr. Sugg's philosophy.*

The only thing I know is what I have seen and experienced in a quarter of a century on the front line, dealing with what I am sure are the problems that you face daily, also. I have heard executives emphasize the importance of attention to details: that attention to details is the all important, the *sine que non* of a good assistant. I disagree.

A proper overall objective comes first, and if properly conceived the details will naturally and inevitably follow. "The centipede was happy quite until the frog in fun said, 'Pray which leg comes after which?' That raised his mind to such a pitch he lay awallowing in the ditch considering how to run." The centipede has an objective and the equipment with which to get there. So when he turns all holds loose and starts running, the legs just simply seem to fall in place at the proper split second and never seem to get in each other's way.

One of the tragic faults or shortcomings of men and women seems to me to be the inability to see opportunities for service at hand here—*now*. Many of us seem to feel that somewhere out yonder—or tomorrow—we could do—achieve—live fully—while all the time opportunities lie on our very door step.

The Holy Grail has done more for me than any book or sermon or lecture that has ever come my way. You remember the story—Sir Launfaul set out with big entourage in quest of the Holy Grail. On his way out he passed a beggar at the gate holding a cup begging alms. What notice the knight gave him, if any, was of scorn. He searched far and wide, but the object of his search eluded him. Returning, crestfallen and discouraged, he felt compassion for



the beggar—and of course the cup he held was the Holy Grail.

And then the immortal lines:

"Not what we give but what we share  
For the gift without the giver is bare.  
Who gives himself with his alms feeds three—  
Himself, his hungry neighbor, and me."

A great improvement in the conduct of our offices and the patient-doctor relationship would be to change our program somewhat. I know that in our state at least, we are always having the doctor address the medical assistants. Now that is all to the good to a degree, but I think turn about is fair play, and you folks have much to offer us and should have a chance frequently to come before our meetings, take your hair down, and expound the patient-doctor-assistant relationship from a different point of view—your point of view.

The successful outcome of many of the problems in human affairs turns on the emotional, psychological, if you please, and no stone should be left unturned to explore the possibilities here.

The morale, esprit de corps, then, must be one of the big objectives of any office. It is not so much what we say or do, but rather how we say or do it. The overall atmosphere of a definite desire to make the office hum should be so well understood and appreciated that mutual assistance and even criticism should be a part of our daily lives. Any organization, be it small or large, and especially is this true in the field of medicine, has a distinct personality of its own.

I would rather have an organization with a soul and without a sou as vice versa. I am questioned frequently when it is noted that my personal office nurse has been with me almost a quarter of a century, and others in the organization have been there for extremely long times, how in the world we keep them. Someone asked recently to see the contract under which my nurses work. Well, we have no contract and very little understanding, and that goes for the doctors as well. They simply go to work, and stay as long as they like. Mutual profit, dignity and respect are the keystones on which a satisfactory medical organization can be established. And I believe that every one of you would work and be satisfied at a minimum salary if your employer took pains to see that your dignity and mental integrity are protected. When, for any reason, you cannot return the compliment, you should of course ask to be relieved.

The least desirable of all medical assistants are ones who are not sold on the job—ones who have not adopted it as a profession and a way of life. If it is only a means to an end, it will prove futile for all concerned.

You absolutely must like people, even sick, unreasonable, cantankerous people, or else you will be bored stiff and will probably degenerate into a clock-watcher, than which there is no more demoralizing situation in which you may find yourself. One thing is certain—that this interest cannot be simulated. You can't depend on good looks, back slapping or the gushy type of approach. You must have the gentle light from inside that radiates from a genuine interest and understanding of the problems, and willingness to follow them at all costs.

Mentioning the fact that patients are sick people, it must be remembered that every one who enters the doctor's office is sick. It may be worry, anxiety, frustration, a constitutionally inadequate person, one whom nature has cheated, or the fates have frowned upon. Whatever the circumstances are, the fact that they come in, means that they are sick. It is tremendously surprising over the years to recall the successful solution of medical problems by medical assistants and their attention to little personal problems.

We are trying in our place to emphasize the professional side of medical care, rather than the merchandising or business side. And here, too, the assistants of all types, with proper indoctrination, can be of utmost help. People are always coming in and asking the price of a chest x-ray. Our stock answer is that we charge nothing for x-rays of the chest, and the same goes for blood counts, urinalysis, and what have you. Of course, the majority of applicants are astonished at the answer, but we take the time, the girls do especially, to find out why they want the x-ray. They then explain that the doctor will give his professional opinion as to whether or not they have tuberculosis and for that service he will charge a fee, but the x-rays, laboratory work, and all such are merely his tools and he makes no charge for them. The point is to try to get people away from mechanized diagnosis, to make them understand that professional opinions are the services for which they pay and that these are arrived at through many sources. We have found that they like it that way, and that it does add to the dignity of the practice of medicine.

If you adopt the proper philosophy of life as applicable to an assistant in a doctor's office, where the patient is admitted on his own motion and then treated as an honored guest, if you comprehend that the Golden Rule is not only a religious truth but is also scientific physical law, that is, that all action ends in reaction, and every bit of energy expended toward the patient's welfare will as surely return as will the echo in the mountains; if you add a natural God-given quality of curiosity, this business of helping make a medical organization go, can be, I know, tremendously exciting and satisfying work.

For a long time it has been considered a part of medical ethics to hold the doctor-patient relationship as sacred as religious freedom, and any deviation or breach of confidence or revelation of medical secrets by the physician has been frowned upon by all doctors, but there are many times as many assistants as there are doctors, and their indoctrination in this part of ethics has not always been of the highest type. We have seen confidential matters leak out of the office on a few occasions and have heard of them in many more. The one and only thing for which I would fire a girl summarily, is for talking shop at home or at parties.

Your most difficult specific task is the appointment problem, and it is a grave one. One thing only I know for sure. If, for any reason, patients can't be seen, tell them frankly—and *early*.

The *nice* patient who doesn't complain when she waits—who sees others seem to come later and get attention quicker—who is kept on the hook by puerile platitudes and cooked-up excuses—she may be the nice patient, but she is likely to be the one who never comes back. She can get revenge for being pushed around and don't think for a minute she won't do it. She not only won't come back, but she uses the incident to poison others. She must laugh, cynically to be sure, when she observes us—so frantically spending our money to further public relations, speeches, radio, newspaper, committee meetings, when a dime's worth of time and attention by some alert medical assistant would have had her "in the bag." I doubt if we can buy friendship or good will. We have to earn it and deserve it, and you are the shock troop brigade on which we must depend.

It goes without saying that loyalty to your doctor is one of the choice ways to influence him. However, this item can be slightly overdone, especially if you overdo the defense of your doctor. There is no cause to take up the cudgels every time anyone says or insinuates that the Doc could stand a bit more learning, manners or patience. If it is a small thing brought up by a small person, it will blow over, the blaze will be less with the least fanning. If it happens pretty regularly, it might be well to look into the matter and bring it to his attention the best way you can. Most any way will be the wrong way. There are some people who just won't see your doctor or your group in your way. It seems odd to you, but no amount of arguing will bring them around. It is better to stay home and saw wood than to start a one-man campaign for the boss. "Tend to your knitting" was grandmother's phrase for it. And slipping a barb into competitors is no good either.

I am sure you girls have long since discovered the easiest way to bring your doctor to see things

your way—flattery, I am certain, you have tried. If not, do so at once, for we are all suckers for that bait. Just remember though that flattery is like a rich and expensive perfume—don't use it lavishly—just a touch here and a pat there is more effective.

It really takes a sense of humor to get along in this troubled world now at most any job, and certainly this is a most advantageous facet of the character of one who deals with sick people. There is always enough humor taking place in the office to relieve the stress, however, if we have an eye to see it.

A mechanic or technician who screws on a nut or adjusts a lever can be taught. A medical assistant is a person dealing with people, and no amount of lecturing will do much good. If you don't manicure nails at home, wear neat clothes, and automatically practice good manners, you will likely fail when you come to the office to "put on office manners." A great trait that is susceptible of cultivation is a knack for being natural—that is for being yourself.

Religion and politics are two items that of necessity must be discussed very little by the doctor's assistants, especially at the office. To be sure, one's politics and religion are his own, and his opinions are his own and should be respected, but I know of no surer way to antagonize a large section of your clientele, and drive them away and make yourself unpopular, than to have fixed and voluble opinions on these subjects, especially if you are unable to approach either except on an emotional plane, and that goes for most of us. To shout your opinions is not only bad taste, it is first-hand evidence of an inherently intolerant person. It is to be remembered first, last, and always that the other fellow has equal right to make up his own mind and form his own opinions without any unsolicited help from you.

Tolerance is a positive virtue anywhere and any time, and it is a quality of character that will especially win patients. How any person can be intolerant of another because of his color, speech, occupation, etc, is beyond me, and it is doubly bad to condemn whole races, or groups, or to generalize. One of the most obvious traits of an inferior person is to pass judgment on another whom he does not know because of the group to which he belongs. In every instance when you are tempted to scorn, it is better to say, "There but for the grace of God go I."

I am not here attempting to eulogize either Democracy or Christianity or even to say these established and cherished institutions are right, but I would say that if they are right then all people must be included and treated on individual merits—and how completely this applies to the doctor's assistant. If you are intolerant, you are probably cynical. If



you are cynical, you are sick and need a psychiatrist—and quick.

I hear much complaining these days, not only in medicine but in all walks of life, about the terrible times in which we live. While there is no gain-saying the fact that it is not exactly the time for sissies, or milquetoast personalities, it is my honest opinion that this is the best of all possible times since history was recorded to be alive, and this particularly applies to medicine and medical assistants.

If the times present danger, they also present opportunity. If there has been much accomplished to make our profession outstanding, there remains much more to be accomplished. The times challenge our faith and our beliefs, and they challenge our ability to handle our emotions, especially our hates and fears, and in spite of the great progress in the laboratory, there has not yet been devised a test that will measure the cause, gauge the heights and depths and prognosticate the ravages of our fears, and we have no antibiotics that can possibly be applied to them for a speedy cure. The therapeutic measures that we offer our maladjusted patients, often, I am sure, could be applied with great benefit to ourselves. If we can and will adopt the method of searching introspection and apply the horse-sense and gumption that we have to adjust ourselves to what may come, with patience and fortitude, great progress may be expected.

The privileges and inheritance handed over to me by my father, to accept responsibility and the chance to work out my own way in life, to succeed or fail, are far too precious for me not to defend and pass on to my son. If only Patrick Henry could say, "I know not what course others may take, but as for me, liberty or death," then we may as well pull up stakes and give the country back to the Indians and move in with communists where we belong. We have developed a sort of national neurosis, and complaining is the chief characteristic. In God's name, let us begin to give thanks for the wonderful time, the wonderful opportunities, the challenging problems, the rich rewards that are ours.

#### A.M.A. Interim Session

*Editor's Note. The following report of proceedings of the A.M.A. interim session held in Denver in December was prepared for the Journal by Dr. L. S. Nelson, Salina, senior delegate from Kansas. Dr. John M. Porter, Concordia, the second delegate from Kansas, also attended the meeting.*

The Public Relations Conference which was held on December 1 in Denver proved to be better attended than any previous session and was very stimulating and interesting. Out of it have come some rather definite conclusions, the first being that the

consensus of informed opinion today is that medicine's toughest problem is winning a favorable public opinion.

Then, classifying the agencies whereby medicine, through service, may win more favorable public opinion, are two important services which doctors can render. Those are rendered through emergency medical service plans and grievance committees.

Allowing the public to know, either through paid advertisements or news items, that organized medicine is trying to give emergency service every minute of every day in the year, is proving helpful. Doctors everywhere really want to give good and complete service, and while plans vary considerably according to the wishes of county societies, their size and location, the fundamental idea is the same everywhere. It is the moral obligation of every member of our profession to fulfill his responsibility by serving his allotted time or being responsible for seeing that someone else does if he cannot.

Grievance committees serving our members indicate that the vast majority of cases coming to their attention concern charges for services. Usually the patient has failed to tell the physician his true financial status. The committees usually bring the disputants together and the facts are presented, which is often all that is needed. The committees are composed of physicians who are older and respected by their conferees. Sometimes lay secretaries prove most helpful. Everyone is agreed that where the committee functions properly, public relations improve. These committees and emergency medical service plans have increased through the last year until there are more than 600 different plans in operation today.

The literature extant relative to public relations and available to all members of the American Medical Association is really excellent. Sometimes the facts therein may seem brutally frank, but they are based on careful appraisal and show clearly a way of ethical modern practice of medicine in keeping with improved public relations. It is recommended reading not only for physicians but also for their receptionists and secretaries and nursing and all ancillary aides. One in particular, *Putting PR to Work*, is a digest of the proceedings of the first medical public relations institute which was held last September in Chicago. This is undoubtedly good reading for all.

Dr. Bauer's presidential address was one of the most practical and pointed we have read. He told us, for instance, that there are more doctors per thousand population being graduated annually in the United States today than ever before; that the present ratio in our country is the highest in any civilized land. Distribution is the only area in which



there is fault. Community responsibility in supplying acceptable facilities is helping improve distribution.

He feels, as many do, that specialty boards should revise their requirements by remembering that the best specialists are those who have a background of general practice. It would also help solve the urgent distribution need if these boards would require one or two years of general practice in a small community as a requisite for board examination. Many of us who have been vitally concerned with "The Kansas Plan" inaugurated by Dr. Murphy can agree wholeheartedly with all phases and implications of this practical suggestion.

The care of non-service-connected disabilities in Veterans Administration hospitals struck sensitive nerves on all sides, and your delegates believe that the signing of the "Pauper's Oath" by people to whom it does not honestly apply is a reflection on the legal interpretation of the executive branch of government. The law is not remiss and does not need changing. It does need reinterpretation. American Legion posts and service officers all over this land should read the address of the National Commander of the American Legion which was delivered to the House of Delegates of the American Medical Association in Denver. No one could criticize the content and, therefore, I take the liberty of quoting two paragraphs from this address:

"There seems to be agreement between the Legion and the medical profession and the hospital people that there is justification for certain types of cases which are non-service-connected being treated by the Veterans Administration. These are the types of illnesses which make the patient a public charge under most circumstances. Specifically, I refer to the tubercular, the neuropsychiatric cases and the cases of chronic illness where over 90 days hospitalization is required. The position of the American Legion is that if these categories of non-service-connected cases are accepted as under the present law, that we, the American Legion, stand willing and ready to join with the American Medical Association, American Hospital Association, American Dental Association and all others to prevent the non-service cases which we might term 'chiselers' from ever receiving treatment by the Veterans Administration. The presence of such an individual who can afford to pay for his private medical care in a Veterans Administration bed means to us that he is depriving a worthy and qualified veteran from receiving the care the Congress and the people of this country intend for him to have.

"Believing as we do the above principles, we think that the present law, P.L. 312, should stand without the dangerous procedure of tampering with it in the

Congress. By the same token, we believe that the enforcement of the present law by administrative means should be reconsidered with every American demanding its fair enforcement."

Be it known to all members of the Kansas Medical Society that the American Medical Association contributed another half million dollars to the American Medical Educational Foundation. While the returns from doctors have been rather slow, and particularly slow in the state of Kansas, it is certainly true that a growing number of physicians have felt a responsibility toward medical education to the extent of including it in their donation budgets for each year. This is certainly as it should be. We cannot fight against federal financing of medical education without finding ways and means to finance this important type of education in some other manner, and certainly contributions to this worthy cause are concrete evidence of our unified stand against federal financing of medical education.

Your delegates appreciate the honor of representing Kansas as best they can among the 200 delegates from all over the land. We have made many friends and have found the meetings stimulating and of great interest. It is difficult for us to bring home to you here a graphic picture of the type of democracy at work which we find so refreshing in these meetings. We are always hopeful that more Kansas doctors will attend, not only the scientific sessions but also take a few hours time to visit the House of Delegates meetings which are open to all members of the American Medical Association. This would serve the double purpose of teaching our members more about the organization to which we all belong and also, by discussion, help the Kansas delegates to better represent this component society.

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### Kansas Heart Conference Day

Kansas Heart Conference Day, consisting of a program on heart disease especially designed for the general practitioner, will be observed at the University of Kansas Medical Center, Kansas City, on Friday, March 13.

Previous conferences of this nature have been held at Winter VA Hospital, Topeka, under the sponsorship of the Kansas Medical Society's Committee on the Study of Heart Disease, the Kansas State Board of Health, and the University of Kansas School of Medicine. The place was changed this year to allow visiting physicians to see televised procedures and electrocardiograms via telephone since facilities for both are available in Kansas City.

Many aspects of heart disease have been studied

at previous conferences. The program this year will give emphasis to electrocardiography.

The program to be presented during the day is as follows:

- 8:30 Registration.  
 9:00-11:00 Cardiac Emergencies—Dr. Herman K. Hellerstein, Cardiac Department, Western Reserve University, Cleveland, Ohio.  
 11:00-12:00 Demonstration of EKG via Telephone.  
 12:00-1:00 Air Transportation of Cardiac and Lung Cases—Dr. Vincent H. Downey, U.S.A.F. School of Aviation Medicine, Montgomery, Alabama.  
 1:00 Luncheon.  
 1:45-2:30 Present Status of Ballistocardiography—Dr. Kurt Reissmann, associate professor of medicine, University of Kansas School of Medicine.  
 2:30-4:30 Myocardial Infarction and Hypertrophy—Dr. J. Willis Hurst, Cardiologist, Emory University, Atlanta, Georgia.

### Nominations for 1953

The Nominating Committee of the Kansas Medical Society, consisting of five past presidents, met at the Town House, Kansas City, on January 20. This is in accordance with the Constitution and By-Laws of the Society, providing that two candidates for all elective positions shall be named by the committee not less than 90 days prior to the annual meeting.

The listing of these candidates in the *Journal* does not preclude the nomination of any other member of the Society. When elective positions are filled, at the time of the meeting of the House of Delegates on May 7, the presiding officer will call for nominations from the floor for each position.

In the list below, the names of present officers of the Society are marked with an asterisk.

### Candidates for 1953

President-elect.....	*Murray C. Eddy, M.D., Hays Thomas P. Butcher, M.D., Emporia
First Vice President....	*John M. Porter, M.D., Concordia Karl E. Voldeng, M.D., Wellington
Second Vice President...	Clyde W. Miller, M.D., Wichita Frederick E. Wrightman, M.D., Sabetha
Constitutional Secretary..	*Dale D. Vermillion, M.D., Goodland Albert C. Armitage, M.D., Hutchinson
Treasurer.....	*John L. Lattimore, M.D., Topeka Dwight Lawson, M.D., Topeka
AMA Delegate.....	George F. Gsell, M.D., Wichita Cyril V. Black, M.D., Pratt
AMA Alternate.....	*Peter E. Hiebert, M.D., Kansas City Lee H. Leger, M.D., Kansas City

The Nominating Committee is composed of Dr. J. H. A. Peck, St. Francis, chairman; Dr. William P. Callahan, Wichita; Dr. Noble E. Melencamp, Dodge City; Dr. William M. Mills, Topeka; Dr. Henry N. Tinen, Wichita.

## DEATH NOTICES

### ROBERT BENJAMIN STORTZ, M.D.

Dr. R. B. Stortz, 35, an active member of the Lyon County Medical Society, was killed instantly on Christmas eve in a highway collision. He was en route from his home in Madison to Galena, where he planned to spend Christmas with relatives.

Dr. Stortz was graduated from Washington University School of Medicine in 1942, after which he entered the Army medical corps and served in the E.T.O. during World War II. He began practice in Galena when he was discharged from the Army in 1945, moving to Madison two years later.

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### WILLIAM BROWN NEWTON, M.D.

Dr. W. B. Newton, 74, who had practiced in Glasco for 47 years before his retirement in 1947, died in Glendale, California, on January 7, after an illness of more than a year. He was a graduate of Central Medical College, St. Joseph, Missouri, and had taken post-graduate work at the University of Tennessee. During his practice he was an active member of the Cloud County Medical Society, an organization he served as president for two years, and since his retirement he has been an honorary member.

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### PAUL MORTON KRALL, M.D.

Dr. P. M. Krall, 68, Kansas City internist, died at his home on January 23 from a chronic heart ailment. He had suffered recurrent attacks since 1945, but preferred continuing his practice to retirement. He was graduated from St. Louis University School of Medicine in 1912. During World War I he served in the Army in France, and later practiced in Kansas City, Missouri. He moved his office to Kansas in 1921, and for many years was a member of the faculty at the University of Kansas School of Medicine. He was an active member of the Wyandotte County Medical Society.

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### ORLIN PEARL WOOD, M.D.

Dr. O. P. Wood, 73, died January 16 at Marysville after several years of poor health. He was an active member of the Marshall County Society. Dr. Wood was graduated from the University Medical College of Kansas City in 1900 and received his Kansas license in 1901. He practiced first at Halls Summit, then at Oketo, and began practice in Marysville in 1931.



# Case Reports From The University of Kansas Medical Center Tumor Conference\*

## Carcinoma Involving the Esophagus

Edited by Harlan I. Firminger, M.D., and Irwin Joffe, M.D.\*\*

Dr. Helwig: Two cases of carcinoma are presented, one of the upper end of the stomach, involving the esophagus from below, and the other a primary carcinoma of the esophagus. Both of these cases present a number of interesting features, and both were successfully operated upon. We will bring out as we go along some of the highlights of this rather distressing condition.

### Case No. 52-107

Dr. Brooker: This is a 70-year-old man. Three months prior to coming to the hospital he noted a large amount of "phlegm" accumulating in his pharynx, which he continually had to cough up. Shortly after that he had some teeth extracted and, like so many patients, he blamed all of his trouble on the dental extractions. He was sure that that was the onset of his trouble and the cause of everything; but actually the difficulty started before that. Soon after he had his teeth extracted, he had more difficulty in swallowing and finally he began regurgitating his food shortly after eating. On regurgitation the food appeared to be the same as it was when he swallowed it; no digestion had taken place.

When we saw this man he looked normal for a man of 70 years except for evident weight loss. An esophagoscope was passed and a biopsy was taken from a narrowed portion which microscopically showed only esophagitis. Our diagnosis was based chiefly on the x-ray findings. Could we see the x-rays on the case?

Dr. Montgomery: Ingestion of barium solution revealed a sharp level of retention in the lower esophagus. There was delay in the passage of barium through a constricted area in the lower two inches of esophagus, with filling defects and a mottled pattern that can be seen extending into the stomach. When the patient was placed in the Trendelenburg position, filling defects were also seen in the fundus of the stomach. The x-rays suggest an intraluminal mass below the point of obstruction. The irregularities in the fundus were best seen fluoroscopically as barium passed over the filling defects in small quantities, but it is not

sharply demarcated as carcinoma of the esophagus usually is; instead, the esophageal lumen tapers through the defective area.

Dr. Brooker: From the x-rays, it is evident that there was a carcinoma primary either in the esophagus or in the stomach. The treatment of course is the same. This man had an esophagogastrectomy through the left chest. His diaphragm was split after opening the chest, the stomach was brought up into the chest and anastomosed to the esophagus above the lesion where it was resected. During the operation we found that he had a large number of lymph nodes involved along the lesser curvature of the stomach. Whether all of those nodes were removed or not is questionable. He has done very well postoperatively.

Dr. Helwig: Thank you, Doctor. Would you care to comment on the difficulties of biopsy of this lesion, Dr. Kittle?

Dr. Kittle: I believe that on examination of the gross specimen it is readily apparent why it was not recognized better at esophagoscopy; the adeno-

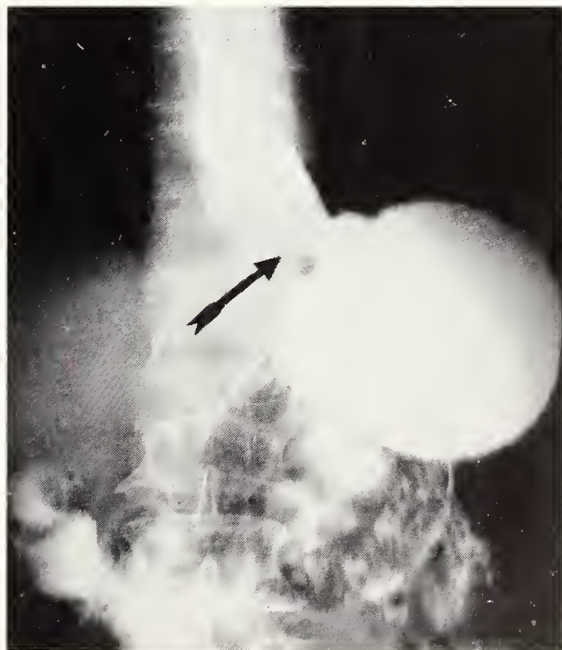


Figure 1. Case No. 52-107. Roentgenogram of the barium-filled esophagus and stomach illustrating irregular filling defect (arrow) in the lower esophagus at the junction with the stomach.

\*Cancer teaching activities aided by a grant from the National Cancer Institute, U. S. Public Health Service, and the Kansas Division of the American Cancer Society.

\*\*Trainee of the National Cancer Institute.



carcinoma arising in the stomach had infiltrated the submucosa of the esophagus, but the mucosa of the esophagus was still continuous down to the cardiac orifice. I feel certain that the only thing that could have been seen through the esophagoscope was extraluminal compression until one was well within the stomach, and then one should have seen polypoid growth. Actually, the biopsy was taken from the esophagus and revealed only esophagitis.

Dr. Helwig: Dr. Boley, would you discuss the pathological findings?

Dr. Boley: The specimen consists of the lower esophagus and about two-thirds of the stomach. The pearl-gray mucosa of the esophagus as it approaches the stomach narrows down to a point and forms a little cleft. On either side of this squamous epithelial wedge is tumor with ulceration. The tumor involves the fundus of the stomach for seven or eight cm. from the esophagus. It is firm, projects above the surrounding mucosa, and has a well defined rolled edge. Microscopically it is an adenocarcinoma with many atypical glands. The regional lymph nodes included in the specimen have hyperplastic germinal centers, but there is no tumor in any of those that we found.

It would be a little unusual, I should think, for a primary tumor of the esophagus to extend seven or eight cm. into the stomach and not go up the esophagus more than this one has. So I think we are justified in assuming that this tumor arose in the stomach and extended up into the esophagus.

Dr. Helwig: Dr. Kittle, would you resume discussion on this case, please?

Dr. Kittle: This is rather a typical history for this disease; that is, carcinoma at the lower end of the esophagus or the cardiac portion of the stomach. I would like to pass from this patient to a more general discussion of the entire problem of carcinoma of the stomach. All those interested in surgery, and medicine in general, can take a great deal of pride in the many advances that have been made in the treatment of this disease during the last 15 years. Although it has been over 70 years since Billroth first successfully resected a portion of the stomach for carcinoma of the stomach, it has been only in the last 10 or 15 years that any appreciable increase in the survival rate and the present cure rate has been achieved.

Now, let me be more specific about some of these rates for cures and five-year survivals. About 10 or 15 years ago, the over-all five-year survival rate for carcinoma of the stomach was quoted as less than five per cent.<sup>1</sup> In the last survey that Dr. Wangenstein<sup>1</sup> did from his cases at the University of Minnesota, he reported a 64 per cent five-year survival of patients with carcinoma of the stomach if the lymph nodes were not involved. In those in-

stances where the lymph nodes were involved by carcinoma, he found a 12 per cent five-year survival. I think that is in marked contrast to the very discouraging picture that has been known in the past. Some of the advances responsible for this very marked change in the outlook of patients with carcinoma of the stomach have centered about the achievements in general that have afforded surgeons the opportunity of doing longer operations and more radical procedures.

The first total gastrectomy was done in 1897.<sup>1</sup> It is now the accepted procedure for most carcinomas of the stomach. This is necessary because of the lymphatic spread of carcinoma of the stomach and the necessity for removing the entire stomach as well as its attached tissues in order to eliminate these areas of lymphatic spread. Always with carcinoma of the stomach one attempts to remove the greater omentum if possible, as well as all of the mesentery and the omentum along the lesser curvature. Recently it has been suggested<sup>2</sup> that along with total gastrectomy one should also remove the distal half of the pancreas, as well as the spleen, again because of invasion in these directions. Now many of these patients, although they may not be offered the opportunity of a five-year survival, do have a remarkable degree of palliation after gastric resection. This may be true even in patients who at the time of operation have hepatic metastases. I think everyone is aware of cases in which the primary lesion was resected, along with a metastasis in the liver; many of those patients survive for several years.

Dr. Helwig: Dr. Friesen, can you tell us something about the "second look" plan that Dr. Wangenstein<sup>1</sup> has devised for carcinoma of the stomach?

Dr. Friesen: As Dr. Kittle has pointed out, the prognosis of the patient with carcinoma of the stomach varies, to large extent, with the presence or absence of lymph node metastases. Essential to the success of the surgeon in removing these lymph node metastases is an accurate knowledge of the location of the lymph nodes commonly involved. In an effort to find out where the metastases occur, Dr. Wangenstein did what he called a "second look" operation. Several of us now have done quite a number of "second look" operations. I think Dr. Wangenstein has done over 60. In this way, he would learn where the metastases occurred and could excise those lymph nodes at the second operation and possibly prolong the life of the patient. He has repeated these "second look" operations on individual patients until no cancer remained. In one instance, he re-explored a patient six times, and at the seventh operation found the abdomen free of tumor. Now this doesn't occur very often, but the great value in these "second look" procedures is to determine where the metastases occur, so that a

more intelligent primary resection can be carried out. The prognosis in "second look" operations with carcinoma of the colon and rectum is even better than are those with cancer of the stomach.

Dr. Helwig: I would like to question either Dr. Friesen or Dr. Kittle concerning the 64 per cent of patients who obtained five-year arrest; what percentage of those carcinomas were so-called "ulcer cancers?" My reason, of course, for asking this question is that there is a very great divergence of opinion among both surgeons and pathologists in regard to the incidence of "ulcer cancer." The cited incidence ranges all the way from Walter Palmer's<sup>3</sup> figure of zero up to the original work of Wilson and MacCarty<sup>4</sup> in 1909, in which they state that 71 per cent of all carcinomas spring from ulcers.

And a further point that I think will probably enter into this almost unbelievably good outlook for what has previously been a pretty hopeless condition will be the histologic interpretation of what is an early carcinoma. Some, of course, feel that there is no such thing—that if one finds a carcinoma growing in an ulcer, one is dealing with an ulcerated carcinoma, possibly carcinoma in situ with secondary ulceration. We know that those lesions can completely heal. Palmer<sup>3</sup> has a case that healed completely, apparently as a result of sloughing of the entire carcinoma; and yet lymph nodes containing metastases were found. It's conceivable that the whole cancer could be sloughed. We all know that in a fair percentage of cases, patients with cancer with an ulcer history will show marked improvement under medical management. So it's possible for the ulcer, even in a cancer, to heal completely. In fact, they have been found to have been "healed" with the bed covered with cancer cells. The roentgenologist can tell you that healing, either roentgenologically or gastroscopically, is not definite assurance that one is not dealing with a cancer of the stomach. It remains uncertain whether these lesions represent an abnormal proliferation at the edge of an ulcer incident to incarceration and distortion of glands with scarring, or whether they actually constitute a true carcinoma. And that is going to be, I am afraid, at least a significant percentage of your 64 per cent. How do you feel about that, Dr. Friesen?

Dr. Friesen: I believe the percentage will be significant, but it can't be overwhelmingly important because of this fact: if 88 per cent of all patients with cancers of the stomach are explored, they cannot be selected very carefully; and if resection is carried out in 78 per cent, again one can't be choosing patients very selectively. And so the "ulcer cancer" patients can't be a large portion.

Dr. Helwig: I want to point out that in Dockerty's<sup>5</sup> material at least, he is unable to determine—

and the surgeon at the operating table and the pathologist with the tumor in his hand are unable to determine grossly—whether the ulcer is cancerous or not in about 18 per cent of cases.

Dr. Friesen: Very difficult. As you say, the figures vary, but surely almost everybody agrees now that the error in diagnosis is from 10 to 20 per cent; don't you agree?

Dr. Helwig: I think so.

Dr. Friesen: I would like to relate at this point an experience I had when I studied 13 consecutive patients with gastric ulcer. Operation was postponed and the patients were treated medically very vigorously, with frequent feedings, and so forth, in an effort to get these ulcers to heal. This treatment was continued for six weeks and the ulcers healed, as shown by x-ray visualization and by gastroscopy; then we operated upon them. Of these 13 patients, three were found to have carcinoma, which again puts the incidence of carcinoma in gastric ulcers at about 20 to 25 per cent. These areas were practically healed and the carcinoma, as you mentioned, was very difficult to find, but it was present microscopically in these three patients.

#### Case No. 52-108

Dr. Brooker: A 74-year-old white man had difficulty in swallowing and some increase in mucus production for 2½ months. His difficulty in swallowing progressed, but he never became so obstructed that he regurgitated very much. Occasionally he vomited after eating, but this was not one of the main points in his history. He lost a large amount of weight. When we saw him, the physical examination did not reveal very much and gave us no lead as to his primary disease. Again, his upper gastrointestinal series was most helpful in revealing his lesion.

Dr. Montgomery: A barium swallow revealed the presence of a lesion in the esophagus. There was no marked obstruction at the upper end of the lesion. Distally, the barium passed into an irregular channel at a level slightly above the arch of the aorta. The irregularity of the lumen extended distally for a distance of two inches. At the lower end of the lesion was an ulcer crater. Normal esophagus was seen a short distance below this ulcer. This is not the classical picture of carcinoma of the esophagus with sharp demarcation and a narrow constricted channel; this is an irregular filling defect with ulceration.

Dr. Brooker: This primary tumor in the esophagus was so high that it presented a problem in resection. This lesion was located at and above the arch of the aorta, which means that trying to resect it through the left chest would be difficult, so the abdomen was opened first. The stomach was drawn



up into the chest and the esophagus resected above and below the lesion, with a high anastomosis. At operation, this tumor was extensive; it had already spread beyond the esophagus, involving all of the tissues around the arch of the aorta, and all of the tumor probably was not resected. However, the tissue at the line of excision was satisfactory for anastomosis. This patient seemed to be getting along well after the operation, but died rather suddenly 15 days postoperatively.\*

Dr. Helwig: Dr. Boley, will you present the pathological findings in this case?

Dr. Boley: The tumor occupied an oval area eight cm. in its greatest length on the right wall of the esophagus. At the narrowest point in the lumen, two-fifths of the circumference of the esophagus was involved by tumor. The appearance of an ulcer crater seen in the roentgenograms was caused by the sharp recession of the tumor from its prominent rolled lower edge. Microscopically, the tumor filled part of the submucosa and invaded deeply into the muscular coat of the esophagus. In places tumor cells involved the entire thickness of the

wall. The tumor cells are relatively small. The nuclei are quite variable in size and staining; the cells have only a moderate amount of cytoplasm, which lacks the acidophilic staining of keratin. This lack of differentiation, however, is not uncommon in squamous cell carcinomas of the esophagus. Although ordinarily we think of squamous cell carcinoma as having intercellular bridges and forming pearls, most of the carcinomas of the esophagus that I have seen are not well differentiated.

Dr. Kittle: Carcinoma of the esophagus, again, is a lesion which only recently has attained any degree of curability. Dr. Billroth,<sup>1</sup> the first person to resect part of a stomach for carcinoma, in 1872 was also the first one to attempt any sort of esophageal resection. His first case was not successful, but about 10 years later there was a successfully treated carcinoma of the cervical esophagus by Czerny.<sup>1</sup> Thereafter surgical treatment progressed rather slowly. The first successfully treated case of carcinoma of the thoracic esophagus was that done by Torek<sup>6</sup> in 1913. In the middle thirties, there were very many successfully treated cases, this being the beginning of the modern thoracic approach to carcinoma of the esophagus.<sup>7</sup>

The level of the lesion determines the type of operation that is done. You will remember that carcinomas of the esophagus are most prevalent in the middle and lower thirds, being less common in the cervical portion of the esophagus. Like carcinoma of the stomach, it is more common in males, with the exception of carcinoma of the cervical esophagus, which is predominant in females. If we consider first the cervical esophagus, the area just below the clavicle and up to the pharynx, the modern day concept of resecting this area is to excise that portion of the esophagus and to restore continuity by means of a flap constructed from the skin (Wookey procedure<sup>8</sup>). There are many other ideas about reconstructing some sort of continuity between the pharynx and the lower portion of the esophagus, but the skin flap is the one most frequently used.

In the lower third, the esophagus can be approached easily from the left side. After resections of carcinoma of the lower third of the esophagus had met with success, attention was directed to carcinomas in the middle third of the esophagus. With lesions of the middle third, the anatomical relations of the esophagus are particularly important because it is in this area that the esophagus lies immediately to the right of the aortic arch, posterior to the trachea and in close proximity to the azygos vein.

The first attempts were made from the left side, and it was found that there was considerable difficulty in mobilizing the carcinoma from the arch of the aorta and from the azygos vein; dissection in

\*Subsequently a peptic ulceration developed in the stomach just below the site of anastomosis with perforation into the right lung. The patient died 15 days postoperatively from a sudden massive hemorrhage into the lung and gastrointestinal tract from this ulcer.



Figure 2. Case No. 52-108. Oblique spot film of the barium-coated esophagus showing irregular intraluminal filling defect posteriorly (arrows) in the esophagus at the level of the aortic arch and anteriorly as an irregularity and narrowing of the lumen. At the lower end of the lesion anteriorly there is an apparent ulcer crater.



the region of both of these structures is hazardous because of the danger from hemorrhage. That led to the suggestion that a combined approach be introduced, and here, as Dr. Brooker has mentioned, the surgeon enters the abdomen as well as the chest. The abdominal approach also gives one an opportunity to examine the liver, so that if massive metastases are present, the operation can be abandoned. While in the abdomen, the surgeon mobilizes the stomach and the abdominal portion of the esophagus. He thrusts his finger through the esophageal hiatus up into the chest and sweeps it around the esophagus. Then the abdominal incision is closed, the patient is turned over on his left side, and a right thoracotomy is done. As one begins mobilizing the esophagus, the stomach slips up through the esophageal hiatus, becomes elongated and may be drawn up to the cupola of the thoracic cavity without any appreciable degree of tension. The stomach functions satisfactorily in this fashion. The portion of the stomach that does remain below the diaphragm becomes dilated over a period of weeks and months. These individuals at first can tolerate only small feedings; but as that remnant of stomach expands, they will frequently become able to eat large quantities of food, and in time will be able to eat regular sized meals.

We see a few complications secondary to this type of procedure. One is from division of both the vagus nerves, which must be sacrificed in resecting any part of the esophagus. That causes diarrhea, which usually persists for one to two weeks. It does not cause any persistent difficulty. The chief problem in these patients postoperatively is that of nutrition. That can be managed, however, by encouraging patients to eat only high caloric foods so that they do not occupy the small space that they do have by foods which do not have much caloric value. These patients usually lose a considerable amount of weight immediately postoperatively, but if their diets are carefully managed, persistent weight loss can be avoided.

Student: What is the cause of the diarrhea?

Dr. Friesen: There is a new theory that achlorhydria may produce diarrhea. The vagus does produce hypo- or achlorhydria. Giving acid to these patients will sometimes correct the diarrhea.

Dr. Helwig: Dr. Kittle, what percentage of your cancers of the esophagus as they come to you are resectable? I won't say curable, but resectable. Would you say 70 per cent?

Dr. Kittle: I do not recall any in the last year and a half that we have not resected. We feel that palliation by resection is worthwhile even in the presence of metastases.

Dr. Helwig: The first point that I think should be emphasized here is that if nothing is done to

cancer of the esophagus, over half of the patients will be dead in eight months; whereas, if they are resectable, one can salvage at least a fourth of them for three years or longer. Anyone who has watched a patient die with cancer of the esophagus knows what an unpleasant experience it must be; if only the agonizing swallowing problem is relieved, much has been accomplished. So it's really a wonderful palliative procedure, even if not too frequently curative.

I'll ask Dr. Montgomery to comment on the management of the inoperable case and the ability of x-ray to palliate such cases by the rotation technic. Dr. Montgomery?

Dr. Montgomery: Squamous cell carcinomas of the type found in the esophagus are not radioreistant. However, they are difficult to treat adequately because of their inaccessible position. In recent years radiotherapy has been administered on a rotating table, so that instead of using several individual ports, the entire esophageal circumference is exposed to the x-ray beam as the patient rotates in front of the x-ray tube. A significant increase in arrest of tumor progress has resulted from this technic, especially when combined with supervoltage x-ray therapy in the range of one to two million volts.

Dr. Helwig: In most series, about three-fourths of the resectable cases will show extension to lymph nodes. Dr. Friesen, would you like to comment on this problem in esophageal cancer?

Dr. Friesen: I think the right-sided approach has allowed us to remove more carcinomas of the esophagus than before. Then, in line with what was said earlier, we have learned more about the locations of lymph node metastases. The right-sided approach and the abdominal incision have allowed us to remove involved lymph nodes in the region of the lesser omentum as well as the lymph nodes along the esophagus. It's the longitudinal type of metastases that we can remove with this type of operation, and I think that's going to show up five years from now in the higher survival rate.

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### Reporting Communicable Disease

*Editor's Note. The following request for co-operation from Kansas physicians was prepared for the Journal by Dr. Thomas R. Hood, executive secretary of the Kansas State Board of Health.*

The State Board of Health needs the assistance of Kansas physicians in carrying on its work of communicable disease control. We have prepared this material to emphasize the type of disease outbreaks which are most likely to have serious significance and which may be amenable to control measures through co-operative work by physicians and local and state health departments.

The reporting of epidemics, or unusual occurrence of communicable diseases, will contribute to a better understanding of the behavior of epidemic diseases. It provides the type of information needed for the application of more effective preventive and control measures. There are civil defense aspects of this reporting. Kansas physicians are invited and urged to report immediately any unusual outbreaks by telephone or telegram. This special request should not be construed as replacing existing requirements on disease reporting.

The report of an outbreak in Kansas will be of value to adjoining communities, health officers in adjacent states, the Public Health Service, the Civil Defense Administration, medical officers in the Department of Defense, and to other federal and state agencies.

Since there is no definition of an epidemic which is acceptable to all persons under all types of conditions, the following statement has been prepared to indicate the principal types of unusual occurrences of infectious diseases for which immediate epidemiological reports are requested. We believe such reports will materially assist us in carrying out our proper duties.

Epidemiological reports are requested for the following types of unusual occurrences of communicable diseases:

1. All cases of smallpox, anthrax, botulism, psittacosis, plague, and rabies (animal and human)
2. Typhoid fever following a gathering such as a dinner or picnic, when one or more cases occur in which milk or water supply has been proved as suspected of being the vehicle of infection; or two or more cases having, or presumed to have, a common source.
3. All outbreaks in which water or food (including milk, milk products) are found to be or suspected of being the vehicle of infection, regardless of etiology.
4. All outbreaks of diarrhea of the newborn occurring in hospitals or institutions.

5. All outbreaks occurring in institutions (hospitals, boarding schools, orphanages, summer camps, etc.) regardless of their etiology.

6. Multiple cases of undiagnosed disease, especially when they occur in industrial groups.

7. High incidence of respiratory diseases, particularly during periods when influenza is likely to occur.

8. Occurrences of anthrax, psittacosis, plague, equine and St. Louis types of encephalomyelitis, and leptospirosis, in animals, since these diseases may spread to man.

9. Multiple or groups of cases of a disease occurring under unusual circumstances such as an uncommon mode of spread, a relatively high case fatality rate, and a high incidence of disease "out of season."

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## BLUE SHIELD

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### Waiting Periods

The subject of waiting periods in a hospital-surgical-medical plan has probably been discussed more than any other by trustees and administrative personnel. Most plans have had waiting periods and many of them still require membership for different lengths of time, before treatment of certain conditions. Originally, the Kansas plan required a waiting period of eight months for treatment of pre-existing conditions. This was a difficult and costly provision of the agreement to administer. Part of this comes from the necessity for much correspondence between the administering office and the participating physician to determine the date of the onset of a condition which is being treated.

This requirement was dropped from the Kansas membership agreement some years ago, to be replaced by an eight-month waiting period for treatment of certain stated conditions. However, in 1949, Blue Cross-Blue Shield eliminated all waiting periods except for maternal benefits and tonsillectomies. Since these two services account for 18.64 per cent of all payments made in Kansas, it is obvious that such a waiting period was important in maintaining an equitable rate structure.

Because of the increasing utilization of services, particularly in the area of elective treatment, it is now the feeling that some further consideration should be given to having waiting periods for some conditions other than maternity services and tonsillectomies and adenoidectomies. A fallacy of one school of thought on waiting periods is that they would be primarily designed to save the plan money. Actually, most of the elective conditions on which waiting periods might apply, could be postponed





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until the waiting periods had been served. So, in the long run there would not be much actual savings for the plan. It is now believed that the greatest value of waiting periods lies in the effect they will have in encouraging members to keep their memberships after they have served their waiting periods. It is the same as having accumulated a vested interest in something like a retirement program. One does not wish to drop a plan in which he has gained certain privileges which would be lost in cancellation.

Therefore, the amount of money saved would become of secondary value. A third advantage of waiting periods, but of minor importance, is the deterrent effect they might have on outright chiseling. They would tend to prevent people from joining and cancelling just to get benefits for recognized needs.

The total of all these factors now results in a new consideration of inclusion of some waiting periods in the membership agreement of Kansas Blue Cross-Blue Shield. If this comes about it will probably be in the category of such conditions and ailments which are prone to be pre-existing. This would include such categories as gynecology, prostatic conditions, hernias, rectal conditions and congenital anomalies.

## ACTIVITIES OF MEMBERS

Dr. Albert L. Bonfanti, Ellis, closed his office last month to report for duty with the armed forces.

\* \* \*

Dr. Herbert L. Bunker, Jr., has returned to his practice in Junction City after spending 16 months in Korea as physician in charge of a prisoner of war camp on the southern coast of the country.

\* \* \*

Dr. S. Paul Hornung, who has been associated with the Dodge City Medical Center, was called to service with the Army Medical Corps last month and reported for duty in Texas. Before leaving he resigned as coroner of Ford County, and Dr. James O'Shea was appointed to the position.

\* \* \*

Dr. C. A. Hellwig, of the Hertzler Clinic, Halstead, was recently elected a member of the German Society for Pathology.

\* \* \*

Dr. Victor E. Watts, who has practiced in Smith County for 45 years, was recently honored by the Smith Center Rotary Club for "service above self." Dr. Watts is the first person to receive that honor from the club.

\* \* \*

The office of Dr. Dean C. Chaffee, Abilene,

which was closed recently when Dr. Chaffee reported for military duty, was opened last month by Dr. Charles C. Gilkey, who had just returned from service in Korea. Dr. Gilkey will practice in association with Dr. Chaffee when the latter's term of duty is completed.

\* \* \*

Dr. J. W. Jacks, Pratt, closed his office on January 1 and reported at Corpus Christi, Texas, on January 8 for duty with the Navy.

\* \* \*

Dr. L. L. Cooper, Fort Scott, announces that Dr. William A. Kells, formerly of Kansas City, is now associated with him in practice. Dr. Kells is a recent graduate of the University of Kansas School of Medicine and has been practicing recently in Pleasanton.

\* \* \*

Dr. James E. Bresette was recently released from active duty with the Navy and has resumed practice in Kansas City, specializing in ophthalmology.

\* \* \*

Dr. P. L. Beiderwell, Belleville, announces that Dr. Alex Scott, a graduate of the University of Wisconsin who recently completed a two-year tour of duty with the Army Air Force, is now associated with him in practice.

\* \* \*

Dr. Lawrence J. Ruzicka, Concordia anesthesiologist, has become a member of the staff of the Gelvin-Haughey Clinic there.

\* \* \*

Dr. James H. Enns, who has been serving with the Navy for two years, has returned to his civilian practice in Newton in association with his brother, Dr. E. K. Enns. During the past 14 months Dr. Enns was aboard the hospital ship USS Consolation, serving in Korean waters.

\* \* \*

Dr. Shirley Clark has resumed practice in North Topeka after having spent two and a half years with the medical department of the Air Force, most recently in Mississippi.

\* \* \*

Dr. Leon F. Kinnan, Caldwell, spoke on cancer research before a recent meeting of the Caldwell Starlight Study Club.

\* \* \*

Dr. Lewis G. Allen, Kansas City, is attending a four-weeks course in the technique of using radio-isotopes at the Oak Ridge, Tennessee, Institute of Nuclear Studies.

\* \* \*

The Dodge City Medical Center announces that Dr. E. W. Schwartz, who has been practicing in Kinsley, is now a member of its staff.



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APPEARING REGULARLY IN THE J. A. M. A.

Dr. Robert W. Myers, Newton, described medical care for the armed forces in Korea in a recent address to the Halstead Lions Club.

\* \* \*

Dr. J. L. Lattimore, Topeka, was guest speaker at a meeting of the St. Anthony Murdock Hospital staff in Seneca on January 19. He discussed pathological and legislative matters.

\* \* \*

Dr. Frederic O. Epp, Augusta, went to New York last month to attend a two-day meeting of medical personnel of Socony-Vacuum Oil Company, Inc.

\* \* \*

Dr. W. W. Kridelbaugh, Arkansas City, has been notified of his recall to service in the Navy. He is to report on May 8.

\* \* \*

Dr. John G. Shellito, Wichita, spoke on "The Need of a Tuberculosis Sanatorium in Wichita" before the Sedgwick County Medical Assistants' Society on January 21.

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## COUNTY SOCIETIES

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A meeting of the Harvey County Society was held on January 5. Scientific papers were presented by Dr. Charles Pokorny and Dr. J. W. Hertzler. Dr. Quinton Cramer of the Bethel Clinic, Newton, was received as a new member, and Dr. James H. Enns, who has been in military service, was welcomed back by the group.

\* \* \*

Dr. Michael J. Cox, Dodge City, was elected president of the Ford County Society at a meeting held recently. Dr. Arnold H. Baum, Dodge City, was named secretary-treasurer.

\* \* \*

Dr. Clyde W. Miller, Wichita, was speaker at the December meeting of the Cowley County Society. A business session was also held, and the following officers for 1953 were elected: president, Dr. Roscoe F. Morton, Arkansas City; vice president, Dr. M. W. Wells, Winfield; secretary, Dr. Newton C. Smith, Arkansas City; delegates to the state society, Dr. James E. Hill, Arkansas City, and Dr. A. Y. Wells, Winfield; board of censors, Dr. C. C. Hawke, Winfield.

\* \* \*

Members of the Shawnee County Society were hosts to the Golden Belt Medical Society at a meeting held at the new Medical Society Building in Topeka on January 8. For the afternoon program Dr. Hubert M. Floersch, Kansas City, spoke on "Sterility," Dr. H. L. Hiebert, Topeka, and Dr. Frank Hoecker, Lawrence, discussed "The Development of Clinical Radioisotope Centers in Kansas," and Dr.

W. Clarke Wescoe, dean of the University of Kansas School of Medicine, outlined activities at the medical center. A dinner and business session followed the program.

\* \* \*

Dr. H. W. Jury, Claflin, was made an honorary member of the Barton County Society at its December meeting in recognition of his 50 years in practice. The following officers were elected to guide the society's activities in 1953: president, Dr. Homer B. Russell, Great Bend; vice president, Dr. M. O. Steffen, Great Bend; secretary-treasurer, Dr. L. J. Robison, Hoisington.

\* \* \*

Dr. Harry J. Davis took office as president of the Shawnee County Medical Society in January, and will be assisted during the year by the following additional officers elected at a meeting held in Topeka in December: president-elect, Dr. Francis T. Collins; vice president, Dr. D. Bernard Foster; secretary, Dr. Vernon C. Wiksten; treasurer, Dr. Willis L. Beller.

At the meeting special honor was given Dr. W. L. Warriner, 90, only living charter member of the society. He and 13 other physicians, all having reached the age of 85 or having completed 50 years of practice, were awarded special pins to show membership in the 85-50 club. In addition to Dr. Warriner, the following received pins: Doctors W. L. Borst, M. A. Floersch, Ralph L. Funk, W. H. Greider, H. B. Hogeboom, C. H. Kinnaman, C. H. Lerrigo, J. H. McNaughton, C. F. Menninger, John F. Northrup, M. L. Perry, J. C. Shaw, and C. L. Youngman.

\* \* \*

A business meeting of the Miami County Society was held at the state hospital in Osawatomie in December. Dr. William Brown, Paola, was named president for 1953; Dr. Clifford Van Pelt, Paola, vice president; Dr. Charles H. Johnson, Osawatomie, secretary-treasurer, and Dr. W. L. Speer, Osawatomie, delegate to the state meeting. An English medical film was shown for the program.

\* \* \*

Members of the Anderson County Society held a joint meeting with the R. N. Club at Garnett in December. Two films were shown, one on "Allergy" and the other on "Utilization of Food Energies."

The following officers of the medical society, all from Garnett, were re-elected: president, Dr. Mildred Julius Stevens; vice president, Dr. C. B. Harris, Jr., and secretary-treasurer, Dr. R. E. White.

\* \* \*

Dr. Glenn R. Peters was named president of the Wyandotte County Society at a meeting held in December and was installed in the office at a dinner



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meeting at the Town House, Kansas City, on January 10. Dr. Mahlon H. Delp was named vice president; Dr. P. E. Hiebert, secretary, and Dr. Agnes L. Robbins, treasurer. Dr. Galen M. Tice was elected to the board of censors, and the following were chosen as delegates to the state meeting: Doctors Clifford J. Mullen, Lee H. Leger, Rolla L. Strobach, Frank J. Strick, Gaylord P. Neighbor, and William F. Roth, Jr.

\* \* \*

A meeting of the Crawford County Society was held December 18 at Pittsburg, and the following Pittsburg physicians were elected to office for 1953: president, Dr. Howard R. Elliott; vice president, Dr. Earl E. Miller; secretary-treasurer, Dr. David J. Lyons.

\* \* \*

Dr. John C. Mitchell is the new president of the Saline County Society, Dr. Henry S. Dreher, Sr., is vice president, Dr. Oliver L. Martin is secretary, and Dr. Max S. Lake is treasurer. All practice in Salina.

\* \* \*

Officers of the Atchison County Society were elected at the December meeting held at the Atchison Hospital. Dr. Robert O. Brown was named president, Dr. George A. Patton, vice president, and Dr. I. R. Morrison, secretary-treasurer.

\* \* \*

Dr. Robert E. Riederer, Olathe, was elected president of the Johnson County Society at a meeting held last month at the Green Parrot Inn. Dr. George J. Pierron, Olathe, was named secretary-treasurer.

\* \* \*

Members of the Montgomery County Society entertained their wives at a dinner meeting at the Hotel Dale, Coffeyville, in December. Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was speaker. A business session was held and Dr. Rodney Carter, Independence, was named president for 1953 with Dr. Harold O. Bullock, Independence, as secretary.

\* \* \*

The occasion of the 50th anniversary of the Sedgwick County Medical Society was marked with a celebration banquet held at the Broadview Hotel, Wichita, on January 19. Four hundred persons attended, physicians and their wives and guests.

Honored at the meeting were those member physicians who have practiced 50 years, Doctors B. C. Beal, D. G. Buley, J. W. Cheney, J. E. Chipps, J. D. Clark, A. E. Gardner, J. F. Gsell, A. P. Gearhart, T. T. Holt, H. W. Horn, J. A. McLaughlin, A. R. McReynolds, D. I. Maggard, C. A. Parker, F. H. Slayton and A. D. Updegraff.

The speaker of the evening, introduced by Dr. W. J. Kiser, was Dr. Lewis A. Alesen, president of

the California Medical Association. His subject was "Economics and Medical Progress." Preceding the address was the following program: invocation, Rev. Coyd Taggart; introduction of guests, Dr. W. J. Kiser; introduction of new president, Dr. B. R. Meeker; presentation of past president's gavel and recognition of 50-year physicians, Dr. H. C. Clark; prospectus of coming events, Dr. G. F. Corrigan; music, Jeannie Park Gans and Myrth McGaugh Culp.

\* \* \*

A meeting of the Rush-Ness Society was held at the Rush County Memorial Hospital on January 12. Dr. Otis True, Hays, was guest speaker. At the business session Dr. Robert E. Grene was elected president for 1953 and Dr. K. F. Bowser was named secretary.

\* \* \*

Dr. E. LaMonte Gann, Kansas City, was guest speaker at a meeting of the Douglas County Society held at Lawrence on January 13. He discussed hearing problems.

\* \* \*

A meeting of the Riley County Society was held at the Gillette Hotel, Manhattan, on January 21. Mr. Oliver E. Ebel, Topeka, spoke on activities of the Kansas Medical Society.

\* \* \*

The Wilson County Society met on January 14 at the office of Dr. Raymond J. Beal, Fredonia. Officers were elected and Dr. Beal was chosen president for 1953. Dr. Galen M. McCray, Neodesha, was named vice president and Dr. Charles E. Stevenson, Neodesha, secretary-treasurer.

\* \* \*

A meeting of the Wyandotte County Society was held at the City-County Health Building, Kansas City, on January 20. Dr. John H. Mayer, Jr., spoke on "Surgery of Mitral Stenosis."

---

Frozen orange juice concentrate, unknown a few years ago, is now used by 28.5 per cent of American families. Frozen concentrate purchased during the first half of 1952 made 26,731,000 gallons of re-constituted juice, or 94 per cent more than was consumed during the same period in 1951. The figures were reported to the Florida Citrus Commission by the Market Research Corporation of America. Convenience, year-round availability and excellent vitamin C retention are among the reasons assigned for the rapid growth of the new food item.

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The sixth annual clinical session of the American Medical Association, held in Denver early in December, was the largest medical meeting ever held in the Rocky Mountain area. The total registration was 6,733, including 2,614 physicians.

# 50 and Six

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## Senior Thesis from the University of Kansas Medical School\*

### The Use of Isoniazid in the Treatment of Tuberculosis

Donald L. Cooper\*\*

Kansas City, Kansas

On discovering the tubercle bacillus in 1882, Koch said that tuberculosis was the greatest killer of human beings among all the diseases. In spite of the tremendous strides made in chemotherapy of bacterial infections and man's increased scientific knowledge, what Koch said then is still true today. It is estimated that between five and six million people are killed yearly throughout the world by the tubercle bacillus.<sup>1</sup>

Tuberculosis is almost unique among bacterial diseases in that it has remained intractable to the common antibiotics such as penicillin, aureomycin, terramycin, and chloramphenicol as well as the multitude of "sulfa" drugs. It has been taught and thought for many years that this resistance was due to the waxy capsule surrounding the organism. Therefore, before anything could affect this organism, it must first penetrate this waxy capsule, presumably as a fat soluble material. It has now been shown that fat solubility is not required. In fact all of the effective tuberculostats known to date are either water soluble or associated with water solubility rather than fat solubility.<sup>1</sup>

Other problems encountered in the treatment of tuberculosis are the chronicity of the infection and the associated difficulty in getting a drug to the organism because of mechanical barriers imposed by necrotic and fibrotic tissue, caseation, and incorporation of bacilli in phagocytes. Because of these difficulties it is very likely that no drug will ever be found that can cure chronic tuberculosis with the speed and effectiveness of penicillin in other and more acute bacterial infections. Due to the amount of tissue destruction in chronic tuberculosis, even a powerful tuberculocidal agent would still cure slowly because of the slow processes of healing and regeneration of tissue. From the aforementioned phenomena, it becomes more apparent that for successful treatment with chemotherapy, early diagnosis is essential.<sup>2</sup>

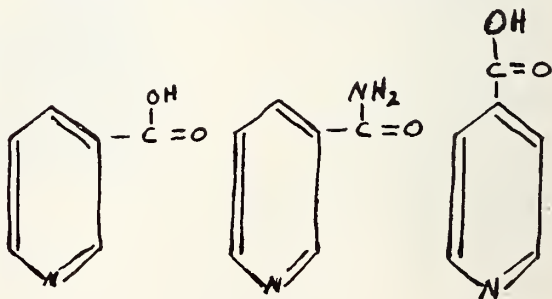
The clinically effective therapeutic agents for tuberculosis may be divided into two main classes: the antibiotics and the synthetics. The former group consists chiefly of streptomycin and dihydrostreptomycin. The latter group is generally divided into four categories: the sulfones, the aminohydroxy-

benzoic acids, the thiosemicarbazones and the pyridine carboxylic acid derivatives. It is in the pyridine carboxylic acid group that we find isoniazid.<sup>1</sup>

By way of background and history, it was in 1945 that Chorine and Huant discovered the tuberculostatic activity of the vitamin, nicotinamide. It wasn't until 1948 that McKenzie and Kushner in the United States worked on this problem, and they postulated that activity against the tubercle bacillus was a function of nicotinamides vitamin radicle. This was more recently disproved by Fox<sup>1</sup> in his investigations of pyridine carboxylic acid derivatives. He demonstrated compounds that were tuberculostatic without vitamin activity. This opened up a large field to be investigated by its indication that possibly any of the pyridine structure compounds could be tuberculostatic. This idea led Fox to the study of the thiosemicarbazones. In the preparation of one of the thiosemicarbazones, isoniazid is created and combined with other compounds to form the desired thiosemicarbazone. In submitting some of the isoniazid for study in the laboratory, it was found to have an *in vivo* antitubercular activity that far exceeded that of any other known substance.<sup>1</sup>

Isoniazid is not a new compound. It was synthesized as an academic exercise by two candidates for a Ph.D. in 1912.<sup>3</sup> It was never used again until the present. At approximately the same time Fox was working in the Hoffman-LaRoche laboratory, researchers at E. R. Squibb and Sons had independently discovered the anti-tubercular properties of isoniazid.<sup>4</sup>

To better understand the relationships of the various compounds already mentioned, several of the more important ones are shown structurally:



Nicotinic Acid

Nicotinic Acid Amide

Isonicotinic Acid

\*This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\*Senior Student, University of Kansas School of Medicine.

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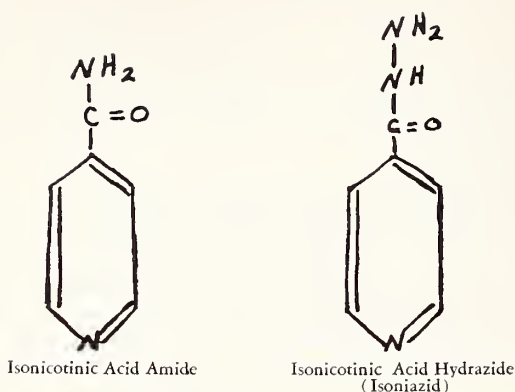
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Isoniazid is an almost colorless crystal which is soluble in water. The activity in vitro has been outstanding. Isoniazid is bacteriostatic against *M. tuberculosis* H37Rv in a concentration as low as .015 micrograms per milliliter.<sup>5, 8</sup> This activity seems to be fairly specific for tubercle bacillus as isoniazid was ineffective in vitro against the common gram-negative and gram-positive pathogenic bacteria, against certain protozoa, and against influenza virus in mice. It may possess some slight anti-fungal properties.<sup>8</sup>

Mackanness and Smith,<sup>9</sup> using isolated rabbit macrophages as a medium, found that isoniazid differs from most antituberculous drugs which have been tested in that its activity is not significantly lowered by an intra-cellular location of the tubercle bacillus. The drug apparently enters freely into cells and exerts its full bacteriostatic action in this environment. This is an advantage over streptomycin, which suffers considerable reduction in activity against intra-cellular bacilli.<sup>37</sup>

The activity in vivo has also been promising. In such experimental animals as mice, rabbits, monkeys, and guinea pigs, isoniazid effectively arrested tuberculous infections with virulent human strains of *M. tuberculosis*.<sup>5, 7, 10, 13, 38</sup>

Toxicity in experimental animals has been thoroughly investigated and has been generally classified as acute, subacute, and chronic. With large doses up to 750 mg./kilogram of weight, the acute toxicity appeared as convulsions, gastrointestinal irritation, and death from respiratory failure. Subacute toxicity, from daily injections up to 50 mg./kilogram, produced gastrointestinal upsets, marked anemia and 100 per cent mortality within two weeks. Dogs tolerated a dose up to 3.5 mg./kilogram per day with no signs of toxicity. Doubling this dosage caused anemia, liver damage and kidney damage.<sup>14, 16</sup>

Oral administration is effective in securing a satisfactory blood and body fluid level, with peak plasma levels being reached in one to two hours. The compound is well distributed throughout the

body in effective concentration, including blood serum, cerebrospinal fluid, and pleural fluid. As much as 50 to 70 per cent of the drug is excreted in the urine in 24 hours.<sup>14, 15, 19</sup>

The use of isoniazid in man at this time has been limited largely to patients with far-advanced pulmonary disease, extensive tissue destruction and positive sputum, usually those having considerable symptomatology. Most of these have failed to respond or would not be expected to respond to other available therapy. The dosage usually varied from three to five mg./kilogram per day, generally by the oral route.

The most striking and promising benefits are increased appetite and weight and general feeling of well being.

Robitzek, Selikoff and Ornstein<sup>20, 22</sup> reported 92 cases with bilateral progressive caseous pneumonic tuberculosis who had failed to improve on previous therapy. They all received isoniazid or its isopropyl or glucosyl derivative, the dosage varying from 4 to 10 mg./kilogram per day orally. Body temperatures fell in most cases, usually within two to three hours, and remained normal throughout treatment. The patients became more cheerful and energetic. Their appetites improved and a weight gain that averaged 18 pounds per patient was obtained, with many patients returning to normal weight after one to four months of treatment. Cough and expectoration were also diminished or eliminated by the end of two weeks in most patients. Some of the toxic symptoms of the disease disappeared rapidly as evidenced by increased muscle tone and skin turgor.

In fully one-half of these patients, however, there was no roentgenographic change. Sputum and gastric washings remained positive on smears in 75 per cent of those treated. In several patients there was a decrease in cavity size, and in a few patients the cavities were closed.

In another series of 44 patients with "hopeless" active progressive caseous pneumonic tuberculosis, Robitzek and Silikoff<sup>21, 22</sup> obtained similar results as mentioned above. One of the earliest signs of clinical response was restoration of normal skin turgor.

A good evaluation of the comparative effectiveness of isoniazid versus streptomycin and P.A.S. therapy was presented by the Medical Research Council of Great Britain.<sup>39</sup>

In this report, 331 cases were treated; approximately one-half were treated with isoniazid alone (200 mg. daily) and the other half were treated with streptomycin (one gm. daily) and P.A.S. (20 gm. daily). All forms of the pulmonary disease were treated, from acute rapidly progressive to chronic cases.



## UNIVERSITY OF KANSAS SCHOOL OF MEDICINE POSTGRADUATE MEDICAL COURSES

### APPLIED NEUROLOGY March 19, 20 and 21, 1953

#### Guest Instructors:

CLARK H. MILLIKAN, M.D., Neurologist, Mayo Clinic; Assistant Professor of Neurology, University of Minnesota Graduate School of Medicine, Rochester.  
BENJAMIN BOSHES, M.D., Professor and Head, Department of Neurology, Northwestern University Medical School, Chicago.  
A. B. BAKER, M.D., Professor and Head, Department of Neurology, University of Minnesota Medical School, Minneapolis.  
EDWARD C. WEIFORD, M.D., Neurosurgeon, Kansas City, Mo. University of Kansas Faculty:  
MAXWELL G. BERRY, M.D., Associate in Medicine.  
MARVIN L. BILLS, M.D., Assistant Professor of Psychiatry and Neurology.  
CHARLES E. BRACKETT, M.D., Instructor in Surgery (Neurosurgery).  
B. L. ELLIOTT, M.D., Associate Professor of Psychiatry and Neurology.  
D. BERNARD FOSTER, M.D., Lecturer in Psychiatry and Neurology; Director, Division of Neurology and Neurosurgery, The Menninger Foundation, Topeka.  
C. G. GUNN, M.D., Resident in Medicine.  
A. N. LEMOINE, JR., M.D., Professor of Ophthalmology and Chairman of Department.  
F. STANLEY MOREST, M.D., Associate in Medicine.  
DONALD L. ROSE, M.D., Professor of Physical Medicine and Chairman of Department.  
LA VERNE B. SPAKE, M.D., Clinical Professor of Otorhinolaryngology.  
A. THEODORE STEEGMANN, M.D., Professor of Neurology and Pathology.  
WAYLAND A. STEPHENSON, M.D., Instructor in Psychiatry and Neurology.  
E. H. TROWBRIDGE, JR., M.D., Assistant Professor of Psychiatry and Neurology.  
WILLIAM L. VALK, M.D., Professor of Surgery (Urology).  
WM. P. WILLIAMSON, M.D., Assistant Professor of Surgery (Neurosurgery).

### MEDICINE OF THE AGING (GERIATRICS) March 25 to 27, 1953

#### Guest Instructors:

VIRGIL S. COUNSELLER, M.D., Professor of Surgery, University of Minnesota Graduate School of Medicine.  
MICHAEL M. DACSO, M.D., Assistant Professor of Clinical Physical Medicine and Rehabilitation, New York University College of Medicine.  
ROBERT B. GREENBLATT, M.D., Professor of Endocrinology, Medical College of Georgia.  
ORMOND C. JULIAN, M.D., Assistant Professor of Surgery, University of Illinois School of Medicine.  
MARTHA O'MALLEY, M.D., Director, Division of Hospital and Institutional Services, Indiana State Board of Health.  
N. W. SHOCK, Ph.D., Chief, Section on Gerontology, Baltimore City Hospitals.

### OTHER COURSES

#### Metabolic Diseases

March 23 and 24, 1953

#### Ophthalmology and Otolaryngology

April 6 to 10, 1953



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Karl J. Waggener, M.D.

At the end of three months treatment it was concluded that isoniazid alone was very little, if any, more effective than streptomycin and P.A.S. It should be mentioned that one of the discouraging things in using isoniazid alone was the fact that at the end of two months, 52 per cent of the cases showed bacterial resistance; at the end of three months, 71 per cent showed bacterial resistance. In another series of cases treated with isoniazid and streptomycin together, it was found that resistance developed in only 15 per cent of the cases at the end of two months, as compared to 52 per cent in cases with isoniazid alone. They concluded most emphatically that isoniazid should not be used indiscriminately.

In three patients with advanced pulmonary tuberculosis who have been treated at the University of Kansas Hospital, the results have not been dramatic. One patient who has been on isoniazid, 100 mg. each morning and evening for 105 days, shows no improvement, and the patient's course continues to go down hill with progressive weight loss. Another patient who has taken isoniazid, 50 mg. three times a day for 32 days, has gained 12 pounds, appetite has improved, temperature has dropped, and there has been a definite improvement in attitude and outlook. The third patient has been on isoniazid, 50 mg. three times a day for 28 days, and shows a four-pound weight gain and some decrease in temperature, but no improvement in sense of well being.

Clark et al<sup>40</sup> reported results of isoniazid treatment in 15 cases of miliary tuberculosis and 15 cases of meningeal tuberculosis. There were two deaths among those treated, both dying within the first eight days after treatment was started and both having miliary and meningeal tuberculosis.

In 12 cases of miliary tuberculosis treated with isoniazid alone, the institution of therapy was followed by a uniform disappearance of clinical illness, regression of x-ray abnormalities, and a high incidence of reversal of infectiousness. It must be remembered that miliary tuberculosis is greatly different from caseous pulmonary tuberculosis.

It was felt by Clark et al that the results obtained with isoniazid in miliary tuberculosis were slightly superior to those previously obtained with streptomycin.<sup>23, 24, 40</sup>

A few of the meningeal tuberculosis cases responded favorably with isoniazid, but more time will be needed for full evaluation, and most of these cases also were receiving or had received streptomycin.<sup>20, 24, 40</sup>

At the University of Kansas Medical Center one patient with longstanding severe meningeal tuberculosis has been treated more than 60 days with isoniazid and shows no change in condition. It will

probably be several months before any good detailed reports will be available that can give conclusive evidence of isoniazid's worth in this form of tuberculosis.

In the treatment of bone tuberculosis, Bosworth et al<sup>25</sup> reported six patients with draining orthopedic lesions that had been resistant to other forms of therapy. They were started on isopropyl isoniazid, 100 mg. three times a day.

There was improvement in all patients but one, who died only eight days after treatment was begun. Temperatures fell, pain was relieved, appetite and well being returned. The sinus washings became negative by smear in four weeks, with one exception. There were 15 sinuses draining and after therapy only five were healed, but it was felt the others improved. Robitzek et al<sup>20</sup> also report encouraging results with tuberculosis of the bones and joints.

Greenberger et al<sup>26, 27</sup> reported several patients with genitourinary tuberculosis who were treated with isoniazid, and they state that symptomatic improvement with reduction of general toxicity was the rule. They do report that no bacteriological cure is obtained and the possibility of drug resistant organisms developing must be kept in mind.

Laryngeal tuberculosis, gastrointestinal tuberculosis, and tuberculous otitis media have all been treated with isoniazid, and some cases appear to respond well.<sup>20</sup>

The toxic manifestations that have been described in man are as follows: vertigo, constipation, muscular twitching, insomnia, drowsiness, headache, weakness of legs, disturbed vision, tinnitus, hyperreflexia, frequency of urination, delay in starting stream, dryness of the mouth, exertional dyspnea, sexual stimulation, eosinophilia, anemia, rise of N.P.N., and skin eruptions.<sup>21, 25, 31</sup> With the doses so far given to man, no serious toxic reactions have occurred. Toxic manifestations are usually transient in character and most of them, when present, tend to subside after seven or eight weeks of therapy.

However, Fetterhoff<sup>41</sup> reports a patient who had epilepsy along with tuberculosis. He was treated with isoniazid and died in status epilepticus. He emphasizes the use of sufficient sedation with phenobarbital in epileptic patients who are to be treated with isoniazid.

Effective blood level concentrations as well as cerebrospinal fluid concentration in human beings are easily obtained with oral dosages of three to five mg./kilogram per day given in divided doses, usually three times a day. There is no evidence of cumulation in patients tested.<sup>29</sup>

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resistant to isoniazid have been obtained.<sup>32, 35</sup> Steenken et al<sup>36</sup> demonstrated increased resistance of organisms in 50 per cent of patients with tuberculosis. This resistance was evident after four to seven weeks of therapy. Steenken et al suggest that if bacteriological resistance relapses persist, cavity tuberculosis cannot be expected to yield to isoniazid unless it is combined with another drug, with surgery, or with both. Middlebrook<sup>33</sup> and Pansy et al<sup>8</sup> state that when isoniazid and streptomycin are used simultaneously, no drug resistance was found in cultures exposed to this combination.

#### Summary

Tuberculosis is killing more people than any other disease. This is due to several factors, one of the most important being the difficulty of getting an effective chemotherapeutic agent, if there is one, to the organism deep in a fibrotic, necrotic, caseated area, or located in phagocytic cells of the host.

If an effective chemotherapeutic agent is found, earlier diagnosis and earlier treatment will be needed if one plans to rid the world of this infection.

The clinically effective therapeutic agents now available are either from such antibiotics as streptomycin or from such a synthetic as isoniazid. Isoniazid's anti-tubercular activity was discovered independently by researchers of two different laboratories. It is an effective bacteriocidal agent on the tubercle bacillus both in vitro and in vivo. Both isoniazid and its isopropyl derivative appear to be of low toxicity. The dosage ranges from three to five mg./kilogram of body weight per day and is almost always taken orally.

Almost all of the cases treated so far have been ones with advanced disease of the lungs. In general, the response has been one of reducing fever, reducing cough and sputum, gains in appetite, strength, and weight, some clearing of disease on x-ray examinations, and elimination of toxic symptoms. In cases of earlier pulmonary tuberculosis treated with isoniazid alone, as compared to streptomycin and P.A.S., the results indicate isoniazid to

be no more effective than streptomycin and P.A.S. The results from treatment of miliary and meningeal forms of tuberculosis are encouraging, but not enough work has been reported to make any further statements. Some of the other forms of tuberculosis that have been treated have responded, but there is still much more work and evaluation to be done.

The most common toxic manifestations have been constipation, increased reflexes, difficulty in starting micturition, positional hypotension, dizziness, mild anemia, eosinophilia, dryness of the mouth and headache. No serious toxic reactions have occurred, and most of the toxic signs observed have been transitory.

Tubercle bacilli are capable of becoming resistant to isoniazid in vitro and in vivo. By using both streptomycin and isoniazid, investigators were unable to develop resistant strains.

It must be emphasized that isoniazid has shown some ability to destroy the tubercle bacillus, but it probably should not be used alone and should be used only where competent control of the patient can be maintained. The basic principles of the treatment of tuberculosis should not be deviated from. Much more time and work will be needed to establish the final place, if there is one, for isoniazid in the treatment of tuberculosis.

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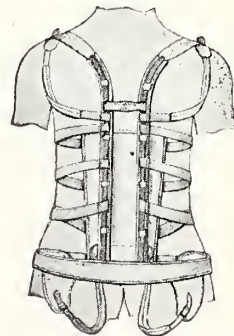
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Volume LIV

MARCH, 1953

No. 3

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## *Greetings!*

It is a pleasure to be able to introduce to the members of the Kansas Medical Society the annual medical school issue. Originally it had been intended that my report on the progress of your school would be included in this issue. For practical reasons that report appeared in the preceding issue; I believe that the accomplishments described therein reflect great credit on the Society and every Kansas physician.

Your Committee on Medical Schools has taken an active interest in the school this year. During the course of two excellent meetings, several suggestions were made for articles to be published in the Journal. One of these articles, relating to medical school admission policies, will be ready for an early issue. I would hope that members of the Society feel free to request certain articles of general interest from the administrative officers or faculty of the school. Only in this way can we serve you best.

W. CLARKE WESCOE, M.D., Dean  
University of Kansas School of Medicine

# Treatment of Cervical Stump Carcinoma

Galen M. Tice, M.D.\*

Kansas City, Kansas

A review of cases of carcinoma of the cervix treated in the Department of Radiology of the University of Kansas School of Medicine during the period of 20 years from January, 1933, to January, 1953, was recently made. In this interval, 240 cases of carcinoma of the cervix came to our observation for treatment. These cases were exclusive of those cases in which the treatment was shared by some other physician. In this series of cases we found 26 cases of carcinoma of the cervical stump.

In reviewing the literature on the subject of carcinoma of the cervical stump, we find considerable stress placed by gynecologists on the time interval that has elapsed since the removal of the uterus and the discovery of carcinoma in the cervix. Donnelly and Bauld<sup>3</sup> express the opinion of most authors as follows: "We classify true stump cancer as those cases in which malignant lesion is diagnosed two or more years after the subtotal hysterectomy. . . . The problem of the stump cancer under two years is essentially one of missed diagnosis, whereas the true stump cancer may be considered the result of inadequate surgery for benign conditions."

Meigs<sup>12</sup> suggests that carcinoma missed at the time of hysterectomy, "is due to lack of inspection and examination of the cervix at the time of operation. It is probable that the patients were bleeding and had fibroids, and that the abdominal operation was done and the uterus removed without preliminary inspection of the cervix in the lithotomy position. In other cases the cancer develops within three to six months postoperatively and was certainly present at the time of the operation, but was not recognized because it was so early or was present in the endocervix."

Witte and Ovitt<sup>26</sup> would divide cervical stump carcinoma into three groups. Group 1 would include those that occurred during the first year following supracervical hysterectomy. Group 2 would be that series of cases diagnosed in the second and third year. Group 3 would include those cases occurring three years after supracervical hysterectomy. The last group would represent the cases that in their opinion should be called "true primary" stump carcinoma. Group 1 would represent the case in which tumor was surely present at the time of surgery, and Group 2 would include the cases in which the tumor

was probably present at the time of removal of the uterus.

Ward<sup>23</sup> suggested one year as the proper time after supracervical hysterectomy to classify the cervical carcinoma as a "true stump" carcinoma. Van Graef<sup>22</sup> favored two years instead of one. Nuttall and Todd<sup>15</sup> agreed with Van Graef. Healy and Arneson<sup>5</sup> present evidence of long duration of cancer of the cervix before diagnosis, and they chose three years as the time interval.

Meigs,<sup>11</sup> in 1936, reported 80 cases of carcinoma of the cervical stump from records of Massachusetts General Hospital and from Massachusetts State Cancer Hospital. Of these, 32 were cancer of the vaginal vault occurring after panhysterectomy. Twenty-three cases occurred within one year and were considered to be cases in which tumor was present at the time of hysterectomy. In nine cases, adenocarcinoma had been diagnosed in the uterus at the time of hysterectomy, and adenocarcinoma found in the cervix was considered to be a recurrence. Only 21 cases classified as "real stump cancer" were recorded. He found, then, only 2.1 per cent of true stump cancers.

Our 26 cases of cervical carcinoma were divided as to the time interval between diagnosis and the supracervical hysterectomy as follows:

Less than 6 months	9 cases	35% of series
$\frac{1}{2}$ to 2 years	4 cases	15% of series
2 to 5 years	4 cases	15% of series
5 to 22 years	9 cases	35% of series

For the purpose of comparing with statistics where only the "true" carcinoma of the stump is considered, 50 per cent of our cases would fall into the latter group and the other half would be in that group where tumor was found within the two-year interval that seems to be accepted by most gynecologists.

It seems to us, as radiologists whose primary interest is in the treatment of the case, that whether the tumor was present before hysterectomy or whether it developed as a separate primary tumor later, is of academic interest. When the case is referred to us for radiation therapy, we must adjust to the immediate situation without worrying about the historical events leading to the diagnosis. A distinctly different treatment problem presents itself than in the case of the carcinoma of the cervix in which the uterus has been retained. Perhaps this attitude is too isolated. The radiologist who sees 50 per cent of his stump cancers of the type that should have been

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diagnosed at or before hysterectomy, has an obligation in joining his gynecologist colleagues in urging the surgeon who handles these cases to cut around and not through the cancer.

It is not my province to judge whether the surgeon should do a supracervical or a complete hysterectomy in each case. It is interesting to review the remarks of leading gynecological surgeons in this respect. Ward,<sup>23</sup> in 1941, said, "In my opinion the total operation is to be preferred and is my present practice because of the evident higher incidence of stump cancer than was formerly thought to occur and of the frequent association of cancer with fibroids. Yet we must recognize that in average hands there is more danger of a higher mortality and such complications as injury to the bladder and rectum, infection and lack of vaginal support, than in skilled hands. Also the expert surgeon will meet cases with a definite increase in risk due to obesity, adhesions, fixation or systemic disease, which makes the subtotal operation a safer and wiser procedure. If, however, the subtotal is considered, a careful study of the cervix should be made and appropriate treatment used if indicated."

Ward mentioned vesicovaginal fistula as a complication that occurred one and a half times as often when the complete operation was done, as compared to the partial procedure. Behney<sup>1</sup> considered this also as an added risk. The difficulty in applying a capsule of radium was mentioned as the reason for this added risk.

Masson,<sup>10</sup> in 1940, said, "For the occasional operator or for the surgeon who has not taken special pains to become thoroughly familiar with the technique of total abdominal hysterectomy, my advice would be to continue doing the subtotal operation in a large majority of his cases, even at the risk of having an infected cervix which might require treatment or removal at a later date. A neglected infected cervix is a definite predisposing cause for complications. The most frequent of these is thrombophlebitis, and the gravest are pulmonary emboli and the later development of cancer."

Perhaps the most logical and accurate method of evaluating the added risk, if such there is, in doing a complete hysterectomy, as compared to supravaginal hysterectomy, is to compare the mortality figures. The figures submitted below are from large medical centers and perhaps do not reflect the mortality in the hands of the less skilled surgeon.

Meigs<sup>11</sup> reviewed reports from eight clinics in which surgery occurred prior to 1936. This included 2,003 complete hysterectomies with a primary mortality of 4.07 per cent and 7,945 supracervical hysterectomies with a mortality of 1.6 per cent. The report by Meigs was made prior to the use of antibiotics, and perhaps the blood bank was not used as

TABLE 1  
COMPARATIVE MORTALITY RATES

Surgeon		Supravaginal Hysterectomy	Complete Hysterectomy
Masson, Mayo Clinic—1940	(10)	0.9%	1.2%
Te Lind—1941	(20)	0.15%	0%
Witte and Ovitt—1951	(26)	0.65%	0.57%
Reed and Bell—1933	(17)	2.1%	3.1%
Jones and Doyle—1943	(9)	1.43%	1.05%
Waters—1942	(25)	1.9%	0%
Phillips—1945	(16)	....	0.46%

efficiently as in later reports. Actually the figures in Table 1 do not indicate a great deal of added risk for complete hysterectomy as compared to supracervical hysterectomy.

Other potential reasons for leaving the cervix are discounted by most surgeons. Among these are mentioned the need of support for the vagina and the danger of foreshortening the vagina. The danger of infection of the stump as a distinct hazard, separate from the possibility of cancer, is stressed by Tyrone and Weed.<sup>24</sup>

Cell type, as in carcinoma of the cervix as a group, was in our group predominantly squamous cell carcinoma. The pathology was divided as follows:

TABLE 2  
PATHOLOGY

Squamous Cell Carcinoma .....	19 cases
Plexiform Carcinoma .....	1 case
Adenocarcinoma .....	6 cases

Three of the cases in which adenocarcinoma of the cervix was diagnosed had subtotal hysterectomy within two months prior to the recognition of the cervical carcinoma. In each case, carcinoma of the uterus was diagnosed at surgery. These three cases are living following treatment, 4½ years, 4 years, and 3 months, respectively. In another case where adenocarcinoma of the cervix was diagnosed, history indicated that the uterus had been removed 22 years before. I doubt that any conclusion can be drawn from the cell type, except in the case where adenocarcinoma is diagnosed within less than two years after subtotal hysterectomy. This would suggest primary carcinoma of the uterus with extension or recurrence in the cervix.

Most authorities consider it impossible to determine the incidence of stump carcinoma where the uterus has been removed, as compared to a similar number of cases where carcinoma develops in the cervix in the woman who still has her uterus. It would be impossible to know which cases of operated women to select for the control group, since, as in one of our cases, the carcinoma developed 22 years after hysterectomy. An attempt has been made to correlate the number of stump cancers to the number of cervical carcinomas seen in the woman who has not had a hysterectomy. Table 3 lists the



TABLE 3  
COMPARATIVE INCIDENCE OF STUMP CARCINOMA AND ALL CARCINOMA  
OF THE CERVIX: FIVE-YEAR SURVIVAL OF STUMP CARCINOMA

Author	Number of Cases of Carcinoma of the Cervix	5-year Survival of Carcinoma of the Cervix	Incidence of Stump Carcinoma	5-year Survival of Stump Carcinoma
Masson .....	(10)			20.0%
Ward and Sackett .....	(27) 879	28.5%	6.9%	42.8%
Scheffey .....	(18) 369	13.8%	4.8%	41.6%
Healy and Arenson .....	( 8) 2,600	24.0%	2.6%	14.0%
Costlow .....	( 4) 2,071		4.9%	32.5%
Donnelly and Bauld .....	( 5) 780		5.1%	15.0%
Van Graef .....	( 2)		4.1%	
Our figures .....	240	(All cases) (True stump)	10.8% 5.4%	23.0%

relationship between the two types of cervical carcinoma and records the five-year survival as listed by several authors. Our record is included in the table. It is not clearly recorded in the various reports whether the figures given are for "true" stump carcinomas or all stump carcinomas. Since our interest in this paper is primarily in treatment, we have listed all of ours. Our ratio of total stump carcinomas to our entire group is 10.8 per cent. If we would consider only the 13 cases that occurred two years after supravaginal hysterectomy, our "true" stump cases, our figure would be 5.4 per cent, which approaches the figures given by others.

In our series, 12 are living and 14 are dead. The average length of life of those dead was 2.5 years. This includes two patients who lived one and two months respectively. These cases were moribund when first seen. Treatment was by external radiation only in an attempt to control bleeding and pain. It also includes two patients who lived six years each. One of these patients died of a cerebral accident, and one died following abdominal surgery for a carcinoma of the hepatic flexure of the colon, her second primary tumor. Both were free from evidence of stump carcinoma at death. Twelve of the patients are living, and seven have lived beyond the five-year period. This constitutes 23 per cent five-year survival in our small series. One patient is living ten years with no demonstrable disease. Another case was considered so far advanced when first seen that x-ray therapy was given externally as a palliative procedure, through external ports only. Two additional series have been given since her first treatment. She is now living, eight years with disease but in fair comfort.

Radiation therapy is recognized as the treatment of choice in stump carcinoma, as in the case of cervical carcinoma that has not had uterine surgery. Where radium is used to control the local lesion, various techniques are used. It is generally agreed that placement of a radium applicator in contact with a shallow cervical stump, and keeping it accurately in contact with the disease, is a difficult and sometimes inaccurate procedure. Unless the operation was a sub-

total hysterectomy, there will be no chance to use a T or Y applicator. A plaque or mold containing radium capsules may be packed in place. Maintaining good contact for a long period of time will depend on careful packing of the vaginal vault.

Radium therapy may be hazardous. It is generally recognized that, because of the proximity of the bladder which may be used to cover the stump, or because of gut that may be plastered to the stump area, a smaller dose should be used than is used in uncomplicated carcinoma of the cervix. Witte and Ovitt<sup>26</sup> use 1,800 millicurie hours of radium. They do not indicate the length, shape or filtration of the units used. This is followed by external roentgen therapy and a second application of 1,800 millicurie hours of radium. Costlow<sup>4</sup> makes repeated applications of radium using 50 or 75 mg., supplemented by external roentgen therapy. Skinner<sup>19</sup> has for many years advocated implantation of small, low-intensity radium needles into the carcinoma, supplementing this with external radiation.

Meigs<sup>12</sup> emphasizes the difficulty of applying radium because the canal of the cervix cannot be used as the source of a central radium applicator. He considers the danger of fistula formation greater because of the lack of a protecting uterus. He does not designate his treatment choice but indicates that in some clinics a vaginal cervicectomy is done in early cases of carcinoma of the stump. He believes that if surgery is to be done it should consist of the Wertheim operation with removal of nodes and vaginal tissue.

Ward<sup>23</sup> treats the cervix with a radium capsule and 12.5 mg. radium needles implanted in the periphery for a total dose of 3,200 to 3,600 mg. hours.

Our treatment schedule has varied over the 20-year period. In every case we have supplemented the treatment of the local lesion with roentgen therapy. Both our external therapy technique and our intravaginal radiation have changed. We have attempted in the past to treat the local lesion with radium applied to the surface. In a few cases we have supplemented this with needles. For the last eight years we have been using intravaginal or, perhaps a more accurate

term, transvaginal therapy. Of the cases not now living, four were treated with transvaginal radiation and six with radium, and four were so far advanced that external radiation only was used. The living cases were treated as follows: One case had external radiation only, two were treated with radium, and nine were treated with transvaginal radiation. In this later series the dose varied from 5,000 r to 10,000 r, measured in air with an average dose for the series of 7,000 r.

It is our plan to treat all cases of carcinoma of the cervical stump by transvaginal radiation. Intravaginal radiation was advocated by Merritt<sup>13</sup> in 1920. Erskine<sup>7</sup> has advocated its use for years. Erskine, and Merritt and his associates have designed special applicators for this type of treatment. Buslog,<sup>3</sup> Elkins,<sup>6</sup> and Wasson<sup>24</sup> have been among those advocating transvaginal radiation. Behney,<sup>1</sup> in his report in 1940, says in referring to treatment of stump carcinoma, "Per-vaginal high voltage x-ray therapy was employed in one of our recent cases, as well as for more than 50 cases of ordinary cancer. *This form of irradiation seems peculiarly adapted* for safe and thorough radiation of cancerous cervixes after the fundus has been removed."

We agree with Nolan and Stambro<sup>14</sup> that the one-field treatment plan for transvaginal roentgen therapy is limited as to dosage by the reaction at the level of the external os. A maximum amount of 10,000 r is their accepted dose. We have not at any time gone beyond this limit with a one-field technique. They feel that if a one-field technique is used the result should be as efficient as when radium alone is used. We have felt, in treating all types of carcinoma of the cervix, that transvaginal radiation has something to offer when a large, bulky, fungating tumor is present. When it was felt, in cases of cervical carcinoma, that destruction of this bulky tumor might make access to the canal easier for later radium insertion, we have rather routinely used the transvaginal port.

If the treatment is of primary carcinoma of the stump of the cervix, it seems that the problem is much the same as in treatment of a lip cancer. We attempt to destroy the primary tumor with a big dose of radiation directed at the tumor, and we depend on external ports for radiation of the parametria. We recognize the possible value of angling the tube as much as 30 degrees to irradiate the adjacent parametria, as described by Bond<sup>2</sup> and others. Up to the present, we do not feel that we can do angle ports on all sides of the cervix efficiently and accurately. We are still trying. Up to now we use a single port of from 7,500 r to 10,000 r air dose directed at the cervix.

Our present technic uses H v 1 of 1.0 to 1.5 mm. of copper, depending on the bulk of the tumor to be treated. We use the largest bakelite speculum that

will be accommodated by the vagina. A metal tube to fit the speculum columnates the ray up to the vaginal orifice. Our cones measure from 2.0 to 3.5 cms. in diameter. The ray spreads from entrance at the vaginal orifice, depending on the size of the metal tube. We give from 500 r to 750 r daily through the transvaginal port. On the same day the patient gets two external ports crossfiring the pelvis. We expect our treatment series to be given in 20 sessions. External ports consist of two ports anterior to the pelvis and two ports posteriorly. If the patient is large and we are afraid of excess skin damage, we do not hesitate to use lateral and perineal ports. We attempt to deliver a depth dose of 2,400 r to the mid parametria.

The rationale of transvaginal therapy for stump carcinoma seems to us to be quite obvious. We use a divided dose as compared to the relatively undivided dose when radium is used. It is granted that if radium is used, it should be given in two or three separate applications. When transvaginal x-ray is used, there may be as many as 20 separate applications. When radium is used, it is possible that a coil of gut, even though not plastered down close to the radium, may lie more or less inert adjacent to the radium, and be overradiated. With numerous applications of small doses of x-ray, this same segment of gut would hardly be overradiated. If the bladder or gut is plastered to the peritoneal side of the stump, in either instance there will be heavy radiation, but the repeated doses will permit some degree of recovery of the damaged normal tissues that will not be possible if a massive dose of radium is applied. A relatively minor advantage in transvaginal radiation is the fact that the patient can be handled as an outpatient. The expense of a hospital bed, operating room, and anesthetic are avoided. If the patient develops side effects such as nausea and diarrhea, we merely stop treatment for a few days. We do not feel that we must push the treatments rapidly, as we might if the patient were paying for a hospital bed.

The figures of Ward, Scheffey, and Costlow (Table 3) would indicate that salvage of stump carcinoma is as good as, or better than, that in the case of cervical carcinoma where the uterus has not been removed. Meigs<sup>12</sup> reports a summary of 5,672 cases of carcinoma of the cervix, seen in nine clinics. These cases showed a five-year survival rate of 26.3 per cent. Donneley and Bauld's figures and Healy and Arneson's figures fall below this level in treatment of the stump case. Our figure of 23 per cent is a little less than the over-all figure of 23.6 per cent quoted by Meigs.

#### SUMMARY AND CONCLUSIONS

1. In 20 years we have handled the complete treatment, not including surgery, of 240 cases of car-



cinoma of the cervix. Of this number, 26 cases of carcinoma of the cervical stump were seen and treated.

2. Most gynecological surgeons consider two years as the dividing line in separating the "true stump cancer" cases from those in which the cancer was present but not recognized at the time of hysterectomy.

3. To the radiologist it is of academic interest whether the case is a true stump cancer or a missed uterine-cervix cancer. Each case requires treatment.

4. In our present surgical era of antibiotics and blood bank, figures quoted by skilled surgeons indicate that mortality following complete hysterectomy is no greater than that seen with supracervical hysterectomy.

5. Our incidence of 10.8 per cent of stump cancer as compared to all cancer of the cervix is higher than that quoted by most writers. If we quote our figure of "true stump cancer" which is 5.4 per cent, it compares favorably with others who have reported.

6. Our five-year survival of 23 per cent is slightly lower than the five-year survival of 26.3 per cent for all cancer of the cervix as reported by nine large clinics.

7. Treatment consists of local treatment to the cervix with radiation, supplemented by external radiation. Most cases in the past have been treated with radium applied locally in the form of a contact capsule or interstitial needles. In our hands, transvaginal radiation has seemed more safe and efficient than locally applied radium.

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# Pheochromocytoma (Diagnosis and Use of Regitine During Surgery)

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The purpose of this paper is to describe the clinical course of a patient with a pheochromocytoma and the use of Regitine®\*\* as a diagnostic and therapeutic agent.

## I. Historical Reviews:

In 1886, Frankel<sup>1</sup> reported an autopsy finding of bilateral adrenal tumors and cardiac hypertrophy in a girl of 18 years who had had attacks of palpitation, headache, and vomiting for three years. In 1922, Labbe, Tinel, and Doumer<sup>2</sup> noted the paroxysmal hypertension. The first correct antemortem diagnosis was made by Vaquez and Donzelot<sup>3</sup> in 1926. The following year Mayo<sup>4</sup> performed the first successful removal of a retroperitoneal tumor with paroxysmal hypertension. In 1929, the first case was correctly diagnosed and cured by operation by Pincoff and Shipley.<sup>5</sup> Beer, King, and Prinzmetal,<sup>6</sup> in 1937, demonstrated an increased amount of circulating adrenalin in patients with pheochromocytoma. In 1950, Smithwick<sup>7</sup> gave an excellent clinical differentiation between essential hypertension and pheochromocytoma.

## II. General Discussion Regarding the Diagnosis:

The clinical picture produced by pheochromocytoma has been well described repeatedly in medical literature.<sup>7, 47</sup> The correct diagnosis and determination of the exact location of the tumor still presents considerable difficulty because of the protean clinical manifestations, extra-adrenal location, equivocal pharmacological diagnostic tests, and absence of demonstrable adrenal mass. The clinical picture, x-ray findings, and pharmacological tests are essential keys for diagnosis.

However, the demonstration of a pressor substance in blood or urine, when such tests are uniformly used, will probably become the most satisfactory method of establishing the diagnosis.

1. Clinical picture: Clinical history of paroxysmal hypertension, headache, excessive sweating, vasomotor phenomena, elevated temperature, high basal metabolic rate, and glycosuria are typical of adrenal tumors. Persistent hypertension occurs in 25 to 75 per cent of the cases. The absence of headache does not rule out the diagnosis. After removal of tumor,

the basal metabolic rate and glycosuria usually return to normal.

2. Roentgenological examination: The flat abdominal film and intravenous pyelograms are of help in larger sized tumors. The finding of adrenal calcification may be of value at times. Perirenal insufflation of air and laminograms may find some small tumors which may be missed by abdominal film and intravenous pyelograms. The occurrence of sudden death following perirenal insufflation has been reported;<sup>7</sup> therefore, the procedure should be done with caution.

3. Pharmacological tests:<sup>48, 56</sup> The following table will demonstrate the number of false positive and false negative tests that have been reported in cases proved by surgery or autopsy.

<i>Adrenal Testing Agent</i>	<i>No. False Positive</i>	<i>No. False Negative</i>	<i>Toxicity or Remark</i>
Benzodioxane	3	9	Occasional severe hypertensive response.
Dibenamine	7	-	Phlebotrombosis, nausea, psychosis, convulsion, excessive drowsiness and dizziness.
Regitine	8*	1	Least side effect with occasional tachycardia.
Histamine	several	8	Severe headache, induction of paroxysm.
Tetraethyl ammonium cl.	2	3	Tachycardia, sitting position reduces paroxysm.
Mecholyl	-	1	Cardiac arrhythmia marked hypotension, anginal pain; few deaths reported.

\* Some patients were uremic.

A battery of pharmacological tests should be carried out in a doubtful case. At the present time, the Regitine® test seems most reliable. In our experience, the mecholyl test has been associated with dangerous reactions such as cardiac arrhythmia, hypotension, and anginal pain.

4. Increased urinary excretion of pressor substances: Various methods of determination of pressor substances have been reported.<sup>57, 64</sup> However, von Euler's method has been more widely applied in pheochromocytoma. Von Euler and Engel<sup>65, 67</sup> have demonstrated definite increase in urinary excretion of norepinephrine and epinephrine in 13 cases of pheochromocytoma. The norepinephrine content has been found to be 50 times greater than normal. An

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\*\* Regitine: Ciba Pharmaceutical Company.

increased ratio of norepinephrine and epinephrine in the urine favors the extra-adrenal location of the tumor. Normal adrenals produced 10 to 30 per cent of the total amount of norepinephrine. In the first six cases of pheochromocytoma (by von Euler), three were located outside the adrenals, all of which contained excessive amount of norepinephrine. It would seem justifiable to explore the doubtful cases with evidence of increased urinary pressor substances. Unfortunately, most of the hospitals are not equipped to run this test.

#### CASE REPORT

A 54-year-old lady taxi-driver was admitted on December 21, 1951, to the University of Kansas Medical Center complaining of repeated episodes of throbbing headache, pounding heart, blanched face, followed by fatigue and nausea. The patient's description of her attacks, in her own words, was as follows: "The first attack came in September, 1950. It occurred in the evening after dinner. I stooped down to pick up a piece of paper and started feeling sick. I lay down upon the divan and immediately had the feeling that all the blood in my body was rushing to my head. My heart was beating real heavy, and then it all started back down and I felt I was getting better once more. In a few minutes the next attack came, and each time my head hurt worse, but just when I would think I couldn't stand it another moment it would start going back down. I had six attacks over about a three-hour period. In

the meantime my husband had called the doctor, but by the time he arrived I was feeling better but very nervous and weak. He took my temperature, blood pressure, pulse, etc., but found nothing seriously wrong.

"These attacks continued over the next 14 months, never as bad as the first one. During a spell, I sweated profusely and afterwards was exhausted and very nervous. The first week of December, 1951, very suddenly I couldn't exert myself at all without bringing on an attack, and I could never connect the episode with anything except perhaps they seemed likely to occur if I was very tired."

**Physical Examination:** On admission: blood pressure 140/90, pulse 64, respiration 20, temperature 98.6° F. Well developed and well nourished white female, slightly nervous and apprehensive. Fundoscopy: grade ii arteriolar spasm and A-V nicking. Chest and heart were negative. No definite mass could be palpated in the abdomen.

**Laboratory findings:** Urinalysis: reaction acid, sp. gr. 1.022, albumin trace, few waxy granular casts, 5-6 pus cell, 0-2 RBC/HPF. Blood Count: RBC 4.3 million, Hb. 76 per cent, 11.8 gm., WBC 9800, polys 75, lymph 18, eosinophile 1, monocyte 6. Serology, negative. NPN 37 mgm. per cent, creatinine 1.6 mgm. per cent, sugar 78 mg. per cent, sodium 138 meq. per liter, potassium 4.8 meq. per liter, carbon dioxide 25 meq. per liter, chloride 95 meq. per liter, urea clearance normal, concentration and dilution test normal, PSP 15 min. 26 per cent, 2 hours total 68 per cent.

**X-ray findings:** Normal heart and lungs. Intravenous pyelogram revealed the right kidney was depressed downward and rotated on its vertical axis. There was a mass (Figure 1) measuring 8 cm. in



Figure 1

**Clinical diagnosis:** Pheochromocytoma - pre-op.  
**INTERPRETATION:** This record was taken during paroxysms. Definite U waves are present in both the limb leads and the chest leads and slight depression of the S-T segments is noted in leads II, III and aVF.

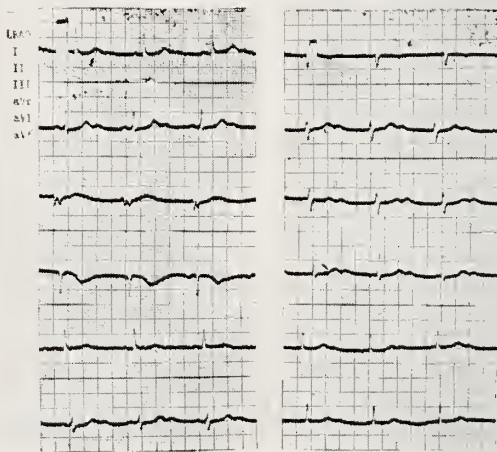


Figure 2



diameter situated in the right adrenal region. Kidney architecture was normal. Normal gallbladder visualization proved the mass on the right was not the gallbladder.

E. K. G. (Figure 2): Sinus bradycardia with a rate of about 60 per minute. Slight depression of the S-T segments in lead II, III and aVf. Marked U waves present in limb and chest leads.

Diagnostic tests: The results of the Benzodioxane®\* and Regitine® tests are illustrated in Table 1.

Clinical Course: The patient suffered several paroxysms during hospitalization. The provocative tests with histamine and mecholyl were not considered necessary to substantiate the diagnosis. An abdominal exploration was performed on December 29, 1951, and a cystic mass in the right supra-renal area measuring 10x12x12 cm. was found. The tumor was highly vascular and contained many interwoven dilated veins. Normal adrenal substance was identified at the superior pole of the mass. During the manipulation of the tumor mass, the blood pressure rose from 150/100 to 210/120; however, the paroxysm was well controlled by 11 mgs. of intravenous Regitine® (as shown in Table 1). The tumor weighed 100 gm. after the cystic content was partially lost. The postoperative blood pressure varied from 150/100 to 120/80 on the next day. Cold

pressor, histamine, and mecholyl tests were all negative on January 8, 1952 (Table 1). She was discharged on January 9, 1952, with a blood pressure of 120/80. Six months after operation, the patient was completely asymptomatic and her blood pressure was 125/80. The E.K.G. (Figure 3) had returned to normal. She has returned to her job as a taxi-cab driver. The histopathology revealed a be-

Clinical Diagnosis: Post-op Pheochromocytoma  
INTERPRETATION: Normal record. Normal S-T segments and absence of U waves.

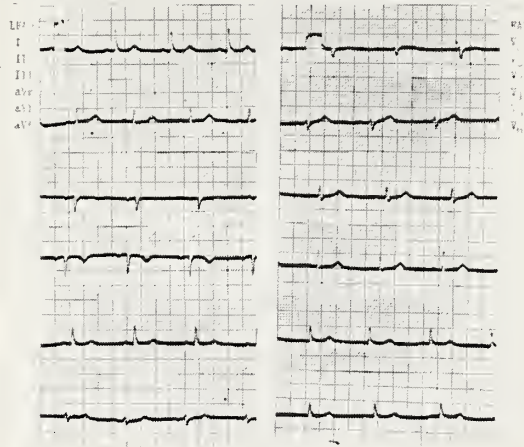


Figure 3

#### DIAGNOSTIC PHARMACOLOGICAL TESTS

Hosp. Course	Preoperative		During Surgery	Postoperative		
Diagnostic Test	Benadaine IV	Regitine I.M.	Regitine I.V.	Cold Pressor	Histamine	Mecholyl
Dosage	20mgm.	2mgm.	8mg. 3mgm.	ice water (1min)	0.025mgm. I.V.	10mgm. sub.cut
B.P.						
Pulse Rate						
Systemic response to diagnostic agent	Headache, nervousness relieved.	Headache, nervousness relieved.		No symptoms	Mild headache, flushed face	Flushed, perspiring, substernal constriction, dyspnea, apprehension, sl. tachycardia

TABLE 1

\* Benzodioxane: Merck and Company, Inc.



nign type of pheochromocytoma (Figures 4 and 5).  
III. Discussion:

Two pharmacological tests (Benzodioxane® and Regitine®) were done on this patient during paroxysms with prompt subsidence of symptoms. The response to the two drugs was identical. No provocative tests were considered necessary.

During surgery, a member of the cardiovascular team was given the responsibility of directing all therapy. A continuous I.V. drip was maintained, and the blood pressure recorded every minute. Spikes in blood pressure upon manipulation of the mass were easily controlled by Regitine®. It was anticipated that the pressure might fall sharply after removal of the gland and Norepinephrine®\* was on hand, but no change in pressure occurred. The response to intravenous Regitine® was prompt and easily controlled by regulation of the dose.

Comparison of the electrocardiograms obtained before and after the removal reveals a complete disappearance of the very prominent U waves. Increase in amplitude of the U wave following injection of epinephrine has been reported.<sup>47</sup>

#### IV. Conclusion and Summary:

1. A description of the paroxysmal episodes ex-

perienced by a patient with pheochromocytoma is presented in the patient's own words.

2. The use of Regitine® as a diagnostic and therapeutic aid is described. The use of the drug during surgery aided materially in controlling the dangerous peaks in blood pressure.

3. Prominent U waves, present in the electrocardiogram, disappeared following removal of the tumor. The prominence of the wave may have been due to epinephrine.

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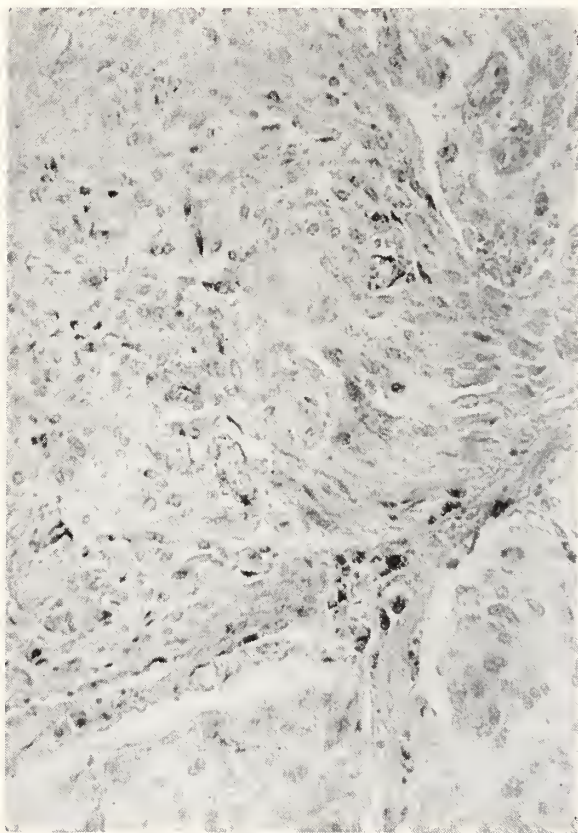


Figure 4

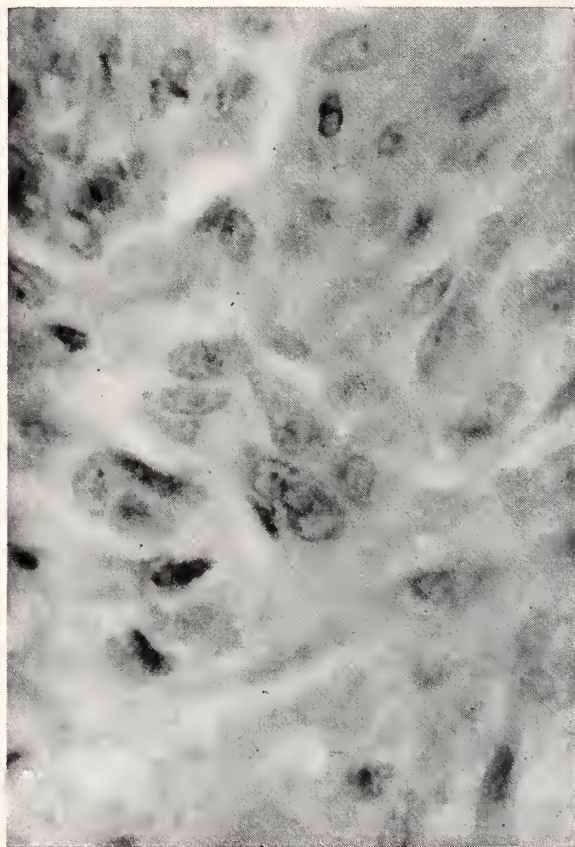


Figure 5

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# Two Cases of Chylous Ascites and Chylothorax in Infants with Recovery

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Idiopathic chylous ascites and chylothorax in infants are relatively uncommon, and the prognosis in such cases is generally considered to be poor. For these reasons we are presenting two cases, in both of which the patients recovered completely in spite of considerable difficulty encountered during the course of their illnesses. The first was a white, male infant, 12½ months of age, who had both chylous ascites and chylothorax intermittently from the age of 9 months until 16 months. The second was a white female infant 4 weeks of age who had chylothorax only.

*Case No. 1.* K. S., a white, male infant 12½ months old, was first admitted to the University of Kansas Medical Center July 19, 1950, because of recurrent swelling of the abdomen for the previous three months. The referring doctor first noted abdominal enlargement in April, 1950, when the boy was 9 months old, and made a diagnosis of ascites. There was no peripheral or facial edema, and laboratory studies of blood and urine were normal. The ascites disappeared and the patient remained well until June 23, 1950, when he was admitted to a local hospital because of ascites and right pleural effusion. A mercurial diuretic was given, and the pleural fluid and most of the ascites receded within a few days. He remained well until July 17, 1950, when the ascites recurred and the patient was referred to the University of Kansas Medical Center.

Past history was non-contributory. The birth was normal. Developmental and family history were not relevant.

Physical examination on admission revealed a well-developed and fairly well nourished white male who was not acutely ill. Weight was 26½ pounds. Height was 31½ inches. The face and extremities were thin. The abdomen was protuberant, and a

fluid wave could be elicited. Genitalia were normal without edema. There was no lymphadenopathy. The legs were slightly "bowed." Examination was otherwise not unusual.

Laboratory procedures: Histoplasmin and tuberculin skin tests were negative; serology was negative; stool examination showed no blood, ova or parasites. All urinalyses were normal. Blood counts revealed slight secondary anemia, 3,400 Wbc's with 68 per cent polymorphonuclears, 27 per cent lymphocytes and 5 per cent mononuclears. The white count remained below 6,250, and the differential remained essentially the same as on admission except for an occasional eosinophile. His blood showed an NPN of 37.5 mg. per cent, CO<sub>2</sub> combining power of 25 meq./l, serum calcium of 10.2 mg. per cent. Liver function tests were all within normal limits. A fat determination on a 24-hour stool was normal. The fat and protein concentrations of blood and chylous fluid are given in Tables 1 and 2.

TABLE 2.  
STUDIES OF CHYLOUS FLUID REMOVED FROM  
PATIENT K.S.

Date	Color	Sp. Gravity	Protein	Fat
7/21/50	White	1.013	2.1 Gm%.	5.76 Gm%.
7/27/50	White	1.010	1.03	6.75
8/9/50	White	1.009	0.68	5.73
9/11/50	.....	.....	3.9	.....

X-ray of the chest on admission was normal. On August 2, 1950, fluid was demonstrated roentgenographically in the right pleural cavity, displacing the heart to the left. Intravenous pyelograms and upper gastrointestinal series were interpreted as normal. X-ray examination of the long bones showed some anterior bowing in the lower extremity, but was otherwise normal.

Hospital course: Abdominal paracentesis was performed two days after admission, and 150 cc. of

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TABLE 1.  
BLOOD PROTEIN AND LIPID VALUES OF PATIENT K.S.

Date	Cholesterol	Chol. Esters	Total Protein	Alb.	Glob.	Total Lipid
7/20/50	.....	.....	6.8 Gm%.	4.85	1.95	.....
7/26/50	205 mg%.	85%	6.5	4.66	1.84	820 mg%.
8/8/50	.....	.....	5.7	4.02	1.68	980
8/21/50	243	69%	.....	.....	.....	.....
10/26/51	222	.....	.....	.....	.....	660



milky fluid was obtained. Six days later, 125 cc. of fluid was removed. The boy was somewhat irritable but was otherwise well except for the ascites. Following the initial paracentesis, the patient was placed on a low fat, high protein diet. On August 1, 1950, 25 mg. of Sudan III in 5 grams of butter was fed to the patient, and paracentesis 6 hours later revealed pink-tinged ascitic fluid which was, however, microscopically negative for Sudan III.

The patient had an increase in respiratory rate, dullness in the right lower chest and dyspnea during the next two days, necessitating thoracentesis on August 3, 1950. The pleural fluid was pink in color and identical to the chyle obtained by paracentesis. The color was thought to be due to the Sudan III. A total of 1000 cc. of chyle was removed from the chest on August 8 and August 31 in order to relieve dyspnea. During this time the circumference of the abdomen varied from 51 to 57 cm. The administration of mercurial diuretics did not diminish the ascites.

On August 14, 1950, Dr. Thomas G. Orr, Sr., performed Route's operation, a venous-peritoneal anastomosis of the left saphenous vein. The abdomen was drained at surgery, but exploration was not done. The postoperative course was satisfactory. There was beginning abdominal distention on August 17, 1950, and a definite fluid wave was felt on August 22, 1950. The chest remained clear and, because the abdomen had ceased to increase in size, the patient was discharged on August 26, 1950, his 9th postoperative day. On discharge the abdomen measured 48 cm. in circumference; a fluid wave was palpable. The chest was clear, and the patient appeared well except for the ascites. He was discharged on a low fat, high protein diet with vitamin supplements. During hospitalization he had received antibiotics only for several days following each paracentesis and postoperatively.

On September 2, 1950, one week after discharge, the patient was readmitted with acute respiratory distress. On the day prior to admission, the boy had received a penicillin injection for acute tonsillitis. On the day of admission a right pleural effusion was noted. Examination showed a dyspneic white male 14 months of age who was acutely ill and cyanotic when lying supine. Respirations were rapid and shallow. Bilateral otitis media, pharyngitis, and pleural effusion on the right were present. The right chest was flat from the midscapular area to the base, and breath sounds were absent in this area. Hyperresonance of the left chest prevented accurate percussion of the heart. The abdomen contained fluid and measured 47.5 cm. in circumference.

A right thoracentesis was done immediately, and 600 cc. of the same type of fluid as on previous occasions was removed. The respirations improved,

cyanosis disappeared, and the patient obtained considerable relief from the procedure. He was placed on chloromycetin and penicillin with clearing of the otitis media and pneumonia of the right base (confirmed by x-ray) by September 6, 1950. His abdomen increased in circumference to 61 cm. during the next few days, and on September 11 both paracentesis and thoracentesis were performed. Thoracenteses were repeated September 19 and September 28, the total amount of fluid removed being approximately 1000 cc. On September 28 the circumference of the abdomen was 54 cm.

A right saphenous-peritoneal anastomosis was performed September 29. Following surgery the circumference of the abdomen was 51 cm. Six days later it measured 57 cm., and a right pleural effusion was again demonstrated. Thoracenteses were done on September 5 and October 10 and a total of 475 cc. of chylous fluid was removed.

Study of the clinical course revealed that whenever there was a gradual increase in abdominal distention, this was followed by roentgenological evidence of a shift of the heart and mediastinum to the left and the appearance of a left upper mediastinal shadow, and in the next day or so a pleural effusion on the right. This cycle was noted twice and seemed to take about nine days for completion. All chest x-rays showed marked elevation of the diaphragm on the right.

The right pleural effusion cleared by October 24, 1950. Although there was some ascites present, it was not marked and there was no further abdominal distention. The patient appeared in good health except for the slight ascites, and was discharged on November 11, 1950. During this second hospitalization red cell count and hemoglobin were normal. The white count varied from four thousand to six thousand with 64 to 72 per cent polymorphonuclears and 0 to 10 per cent eosinophiles. The chylous fluid was the same in character as on his first admission.

Follow-up visits during the past two years revealed the abdominal distention to have disappeared by April 28, 1951, four and one-half months after discharge. He had had several respiratory infections but was well when seen on October 26, 1951. There was no edema of either thigh, and an x-ray examination of the chest was reported as normal. Serum lipids were 660 mg. per cent and blood cholesterol was 222 mg. per cent. On March 10, 1952, the patient weighed 35½ pounds and was a normal appearing 2½-year-old boy. He is still being maintained on a low fat, high protein diet.

*Case No. 2.* D.J.L., a white female infant four weeks of age, was admitted to the University of Kansas Medical Center on January 15, 1952, five days following the onset of suprasternal and lower costal retraction, dyspnea, coughing, and vomiting,

without fever or cyanosis. The patient had been placed on aspirin, orange juice and a red liquid medication with some improvement. On the day of admission fluoroscopy revealed air and fluid in the right chest. Past history was not unusual and family history was non-contributory.

Examination on admission revealed a well-developed, well-nourished infant with moderate respiratory distress, slight suprasternal and lower costal retraction, and shallow respirations with a lag of the right chest. Percussion revealed dullness in the right chest posteriorly to the level of the eighth rib. Breath sounds and vocal fremitus were decreased in the right base posteriorly, and fine rales were heard in the right chest anteriorly. The left lung was clear.

The liver was enlarged to the iliac crest; the abdomen was otherwise not unusual. A hemangioma 1.0 cm. in diameter was in the skin near the left nipple. The rest of the examination was not unusual. Temperature on admission was 98.0° F.

Urinalysis on admission was normal. Complete blood count showed 3,500,000 Rbc's, 10.9 Gm. Hgb., 6600 Wbc's, 42 per cent polymorphonuclears, 51 per cent lymphocytes, 6 per cent monocytes and 1 per cent metamyelocytes. Chest x-ray on admission revealed right hydrothorax and a widened mediastinum.

On the day following admission, a right thoracentesis was performed and 50 cc. of white milky fluid was withdrawn. This provided considerable relief of the patient's dyspnea. She was placed on penicillin, terramycin, and a skim milk mixture fortified with dried skim milk. The fluid withdrawn from the chest was milky, separated into a creamy layer on standing, contained 1.4 gm. per cent of fat, 3.8 gm. per cent of protein, was sterile and contained no malignant cells on pathological examination. Blood studies were done for cholesterol, total lipids and total proteins (Table 3). The patient's clinical improvement continued for one week, whereupon she was given milk containing 3.8 gm. carbohydrate, 0.99 gm. protein and 0.36 gm. fat per ounce. Two days later she was again dyspneic, and an x-ray examination revealed considerable fluid in the right chest. Thoracentesis was repeated on that day, the following day and three days later because of persistent dyspnea, a total of 340 cc. of chylous fluid being removed (Table 4). She was put back on the skim milk mixture and was dismissed two days later, her

TABLE 4.  
THORACENTESSES PERFORMED ON PATIENT D.J.L.  
AND STUDIES OF THORACENTESSES FLUID

Date	Amount	Color	Protein	Fat
1/16/52	50 cc.	Milky-white	3.8 Gm%.	1.4 Gm%.
1/25/52	60 cc.	Greyish-white	4.3	462 mg%.
1/26/52	100 cc.	Greyish-white	3.6	366 mg%.
1/29/52	180 cc.	Milky-white	3.0	.....
2/2/52	200 cc.	Cloudy yellow	....	.....

16th hospital day, apparently symptom-free. Two days following discharge from the hospital the patient was again dyspneic, and thoracentesis yielded 200 cc. of cloudy yellow fluid which was sterile. Follow-up examination one month after discharge revealed a weight gain of 2 pounds, clear lung fields by x-ray, normal sized liver, and normal physical findings. She is still well 11 months after discharge.

DISCUSSION

Milky effusions have been classified as chylous, chyloform and pseudochylous. Blankenhorn proved by experiments that no criteria exist whereby chylous fluids can be distinguished from other milky fluids and that the milkiness is due to finely-divided fat in all cases.<sup>1</sup> We believe that the terms "chyloform" and "pseudochylous" should be discarded and all milky fluids should be designated simply as "chylous."<sup>1, 2, 3</sup>

Our first case, together with those found in the literature, makes a total of 50 cases of chylous ascites in children 15 years of age or younger.<sup>4, 5, 6, 7</sup> Twenty-five of these cases occurred in the age group from birth to two years. Our second case makes a total of 28 cases of chylothorax in children 15 years of age or less. Eighteen of these occurred in infants.<sup>2, 3, 4, 8, 9</sup>

The etiology of chylous ascites in children has been varied, including abdominal tumors, tuberculous peritonitis or adenitis, acute heart disease, and a few cases of abnormality of the thoracic duct. However, the largest number are idiopathic in origin and represent 17 of the 50 cases. In the age group from birth to two years, there are 14 cases of idiopathic chylous ascites. The cases of chylothorax in children include 11 of unknown origin, all in children two years of age or less. Thus, in both chylous ascites and chylothorax, the etiological agent is most frequently unknown, and this occurs more often in infants than in older children.

TABLE 3.  
BLOOD PROTEIN AND LIPID VALUES OF PATIENT D.J.L.

Date	Cholesterol	Total Protein	Alb.	Glob.	Total Lipid
1/10/52	64 mg%.	5.40 Gm%.	4.53	0.87	421 mg%.
1/23/52	162	.....	4.45	1.10	744
1/30/52	148	.....			625



The mortality from both chylous ascites and chylothorax in children is about 33 per cent. Of the 50 cases of chylous ascites, there were 16 deaths. There were 9 deaths in the 26 cases of chylothorax in which the outcome is known. In children under two years of age, 6 with chylous ascites and 7 with chylothorax died. Of the infants dying with chylous ascites, only one was classified as idiopathic. Four of the cases of chylothorax in infants who expired were of unknown origin. No relationship between etiology and mortality can be established.

Death in idiopathic cases is thought to be due to cachexia from frequent withdrawal of the chyle and the resultant loss of protein, fat, electrolytes and fluid. Bauersfeld indicates that death will ensue in three weeks if leakage of chyle is great and withdrawal is frequent.<sup>10</sup>

Therapy in cases of chylous ascites and chylothorax is usually conservative, thoracic or abdominal paracenteses being performed only to relieve pressure symptoms. The chyle removed during the procedure has been returned to the patient by intravenous infusions in some cases. Two deaths have been reported from this procedure. Forbes felt that his patient, an infant 6 weeks of age who received 14 infusions of chyle without reaction, was possibly benefited by this treatment. A low-fat high-protein diet is recommended as a means of reducing the volume of chyle produced. Since the fat-soluble vitamins are largely lost in the chylous fluid, the administration of water-miscible vitamin preparations is deemed advisable.

Attempts to explore the thoracic duct are usually inadvisable. Postmortem examinations often show no abnormality of the duct or its terminals, and in some cases the thoracic duct is not even found. Ligation of the thoracic duct in adults has been recommended by Schaffner and Kirkpatrick.<sup>11</sup> Since exploration for the thoracic duct is especially difficult in children, operations to drain chyle from the peritoneal cavity by a new route have been devised for relief of chylous ascites.<sup>12, 13</sup> The Route operation is based upon use of the saphenous vein to produce a venous-peritoneal anastomosis. In cases of chylothorax, permanent suction drainage to allow formation of adhesions in an effort to close the defect in the duct has been tried.

It is of interest to note that in both of our cases widening of the mediastinal shadow on x-ray was observed either preceding or coincident with the appearance of right hydrothorax. This may be par-

tially explained by the anatomy of the thoracic duct.<sup>14</sup> Griffith postulates that traumatic tears in the thoracic duct would be expected to lead to accumulation of chylous fluid near the tear. He states that tears in the duct in the lower thorax are more likely to result in right-sided chylothorax, while tears in the upper thorax more likely lead to a left-sided effusion.<sup>15</sup> In either case the leakage of chyle would first be into the mediastinum with subsequent rupture or filtration into the pleural cavity.

It seems logical to assume that the same mechanism could occur in spontaneous chylothorax, and this appears to be borne out by the x-ray findings in these two cases. The possibility exists that chylous fluid from the peritoneal cavity could leak into the mediastinum and thence into the pleural cavity or vice versa. The occurrence of chylous ascites and right chylothorax from high thoracic duct obstruction has been reported,<sup>16</sup> but was believed to be due to rupture of the distal lymphatics from increased pressure. There is no constant relationship between chylothorax and chylous ascites and one may develop with or without the other.

#### SUMMARY

Two cases of chylous effusions in children are presented, both resulting in apparent recovery. The frequency, etiology, mortality, prognosis, and treatment of chylothorax and chylous ascites are discussed, together with speculation on some of the unusual aspects of these two cases.

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# Atrésia of the Tricuspid Valve with Large Interauricular Septal Defect, Pulmonary Stenosis and Patent Ductus Arteriosus

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This is an infrequent congenital malformation of the heart. With recent advances in cardiac surgery, accurate clinical recognition becomes ever more imperative. The following case is reported because it illustrates that the electrocardiogram alone may be sufficiently characteristic to enable the diagnosis to be made during life. It is hoped that this report will help others to recognize this unusual congenital heart disease.

## REPORT OF A CASE

M. G., a male child, born at St. Mary's Hospital, was cyanotic at birth and had moderate respiratory difficulties. He was kept in oxygen for the entire first week of life. There was a rather harsh systolic murmur best heard along the left sternal border. No thrills could be felt. Laboratory findings, including blood count, urinalysis and Wassermann test, were within normal limits. Chest x-ray was interpreted as dextrocardia (Figure 1). An electrocardiogram taken on the second day after birth, including leads over the right and left thorax (Figure 2), showed marked left axis deviation, regular sinus tachycardia with the PR and QRS intervals within normal limits. The transitional zone was shifted to the right, and there was evidence of left ventricular hypertrophy. In view of these findings the electrocardiographic diag-

nosis was: congenital heart disease, atresia of the tricuspid valve with possible interauricular septal defect.

About two weeks after birth the infant's color improved and he was allowed to go home.

At the age of about eight weeks, he suddenly became very cyanotic and was rushed to the University of Kansas Hospital where he died 45 minutes after admission. Autopsy performed by Dr. Moriarty showed the following positive findings:

"On opening the chest nothing unusual was seen except that the heart lay in a rather transverse position and the left ventricle lay slightly to the right of the midline. It was found that the heart had one very large ventricle, which was the left, and the right ventricle was quite small, the pulmonary vessels coming off the right ventricle also being quite small. There was atresia of the tricuspid valve. The mitral valve was not unusual. The pulmonary valve measured but 1 cm. in circumference. The ductus arteriosus was patent. There was a large interauricular septal defect. The capacity of the right ventricle was not more than 5 cc. at the very greatest. The liver extended about two fingers breadth below the costal margin on the right. Anatomical diagnosis: congenital heart disease, tricuspid hypoplasia with large interauricular septal defect, patent ductus arteriosus and pulmonary stenosis."

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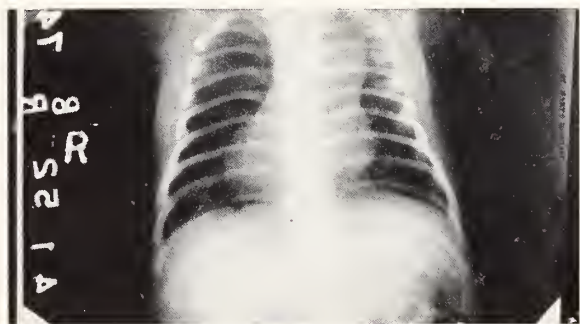


Figure 1. The cardiac shadow is of such configuration as to suggest dextrocardia. There is rather smooth prominence in the left superior mediastinum which shows marked pulsation. Transmitted pulsation from an enlarged thymus cannot be excluded. Abdominal viscera show normal position.

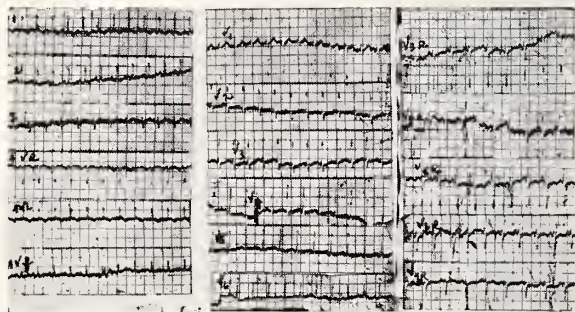


Figure 2. Taken first day after birth. The electrical axis is approximately plus 25° (normal for infants 120° or more). There is regular sinus tachycardia. The transitional zone is in V3r (right thorax). Only V6r and V7r show right ventricular pattern. All other chest leads show transitional or left ventricular pattern. These findings are typical of atresia of the tricuspid valve with diminutive right ventricle.

## COMMENT

The essential feature of the malformation in this case is the diminutive right ventricle. This is always associated either with tricuspid atresia or hypoplasia and a severe malformation of the pulmonary tract. If there is pulmonary atresia, there must be a patent ductus arteriosus in order to have circulation compatible with life. If the right ventricle does not function, the blood is unable to leave the right auricle; some patency in the interauricular septum is therefore inevitable.

Though the malformation under discussion is a right sided lesion, the electrocardiogram shows a left axis deviation. It is the only malformation of the cyanotic group associated with such marked electrocardiographic changes. In the infant under six months of age, the electrical axis of the heart is normally greatly to the right. This physiological deviation is even more pronounced in almost all congenital cardiovascular defects like pulmonary stenosis, the tetralogy of Fallot, and interauricular septal defect. It becomes important, then, to realize that the electrocardiogram is an excellent aid in the diagnosis of

the malformation under discussion. In fact in our case it was the only test that permitted a correct diagnosis ante mortem. Cases of tricuspid atresia with non-functioning right ventricle and auricular septal defect, as well as those of non-functioning right ventricle with auricular septal defect, pulmonary atresia and patent ductus are now amenable to surgery.

## SUMMARY

1. A case of tricuspid atresia with pulmonary stenosis, large interauricular septal defect and patent ductus arteriosus is reported.

2. The importance of the electrocardiogram in making a correct ante mortem diagnosis is stressed. The malformation under discussion is the only one of the cyanotic group to be associated with left axis deviation.

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## Radiographic Diagnosis of Placenta Previa

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The incidence of placenta previa varies in most reports from one in 100 to one in 300 obstetrical cases. Its presence constitutes a serious complication of pregnancy, but one which can be successfully handled if recognized. The appearance of painless bleeding in the third trimester is usually due either to placenta previa or to premature separation of a normally implanted placenta. The differentiation between these two possibilities is markedly facilitated by identifying the site of the placenta radiographically.

The radiographic method we are employing to demonstrate the placental site is based on soft tissue technique originally described by Snow<sup>1</sup> and later modified by Ball and Golden<sup>2</sup> and Reid.<sup>3</sup> Three projections are made without contrast media, and they can be used as routine views on all patients studied by x-ray in the last trimester for other indications as well as in those suspected of having a low placenta implantation. The method has the advantage of requiring no unusual equipment and of giving information, if needed, regarding the maternal pelvis

with measurements, fetal head measurement, and information regarding the condition of the fetus. All projections are made upright, using a Bucky diaphragm and a 40 inch-anode-film distance. The distance may be changed as long as it is accurately measured and recorded. The bladder is emptied just before the films are made.

The three projections are as follows:

1. A.P. upright, 40 inches, 14 by 17 film, 200 M.A., 1 sec., K.V. according to patient's thickness. This projection must include the pubis, ischial tuberosities and both greater trochanters, as well as the major portion of the abdomen.

2. Lateral pelvis, upright, 40 inches, 10 by 12 film, left side nearest the film, 200 M.A.,  $1\frac{3}{4}$  sec., K.V. according to patient's thickness. The film must include the sacral promontory, symphysis pubis, sacrum and coccyx, ischial tuberosities, and the fetal head. These bony landmarks are necessary in order to make pelvic measurements if indicated.<sup>4</sup>

3. Lateral fetus upright, 40 inches, 14 by 17 film, left side nearest the film, 200 M.A., 1 sec., K.V. according to patient's thickness. This film is to include the entire uterine wall as low as the symphysis

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pubis. We have employed a crescent-shaped wedged filter in this view on very heavy patients to show the anterior wall in greater detail without under penetration of the bony landmarks, but it is not essential.

The placenta is a saucer shaped organ having the density of fluid, usually measuring 3 to 4 cm. in thickness in the radiographs. It is more dense than the fatty tissue located in the subcutaneous fetal structures, and is of greater thickness than the uterine wall, which usually measures 1 to 1½ cm. The diameter of the placenta varies considerably, covering a distance of approximately 15 to 20 cm. in a patient near term. Since the average size of a pregnant uterus near or at term is approximately 30 to 35 cm. from the upper to lower pole, placenta previa marginalis is probably present if the bulk of the placenta is visualized below the equator of the uterus.<sup>5</sup>

A normally implanted placenta can be visualized in the fundus on the lateral upright film in a majority of cases. Its identification is relatively easy if it is implanted directly anterior, posterior or superior to the fetus. An additional aid in recognizing the soft tissue structures of the placenta is the presence of physiologic calcification which occurs in approxi-

mately one-third of the cases.<sup>6</sup> If the implantation is oblique, either partially or wholly on a lateral wall, both A.P. and lateral projections are studied. The A.P. film shows a soft tissue shadow, usually poorly defined, between the fetal parts and fat line, and the intestinal gas of the maternal abdomen.

The identification of the normally implanted placenta assumes a greater accuracy as one's experience in viewing the films increases. Needless to say, it is highly dependent on the technical excellence of the films. If the films are improperly made due to poor positioning, over or under penetration, motion of the patient, or dark room errors, an interpretation of the placental site should not be attempted.

When the placenta is definitely established to be present in the fundus of the uterus, with its bulk above the equator, one can unequivocally state, "No placenta previa is present." For this reason we believe that the first step in radiographic study for placenta previa should be the determination of its presence or absence in the fundus. If it is not identified in the fundus on adequate projections, a low implantation is highly probable, and the three films are then examined for evidence of displacement of fetal parts from their usual position. This is most readily determined in the case of vertex presentations, which occur in about 95 per cent of all cases,



Figure 1. Lateral fetus projection showing placenta on superior and posterior wall of uterine fundus.



Figure 2. A.P. upright view showing fetal head displaced from the midline by a low placental implantation.



breech and transverse presentations accounting for about 4.0 per cent and 1.0 per cent respectively.

It was first emphasized by Ball and Golden in 1943 that in the last trimester a normal cephalic presentation dips into the pelvic inlet and occupies a mid-coronal and mid-sagittal plane position if the mother is upright. If the patient is horizontal, the head shifts in relation to the inlet with a change in her position due to the pull of gravity on the fetal head.<sup>7</sup> Therefore, it is necessary to place the patient upright in these projections if one is to evaluate the soft tissues for evidence of a low placenta. Of course the bladder should be empty, as a full bladder will displace the head upward and prevent its entering the pelvic inlet. Disproportion between the size of the fetal head and pelvic inlet will also prevent its entering the pelvis, but this can be ascertained by measurements of fetal head circumference and pelvic inlet from the A.P. and lateral films.<sup>4</sup>

The midline position of the fetal head in relation to the maternal pelvis in normal placental implantation has been studied in detail by Reid.<sup>8</sup> He found the distance of the presenting part from the sacral promontory and inner margin of the pubic symphysis to be less than 1.5 cm., and he believes this measurement may be used as a standard in a fetus near term in the upright position. Placenta previa marginalis or partialis will increase this distance to 2.5 cm. or more as the head is displaced by the placenta forward or backward. These measurements are easily obtained from the lateral film.

If the placenta is laterally implanted in the lower uterine segment, the head will be shifted to the right or left in the A.P. view. Displacement of the fetal head from the mid-sagittal plane or mid-coronal plane, or both, is strongly suggestive of placenta previa partialis, particularly when the placenta is not identified above in the fundus, or when identified below the mid-line of the uterus. If the head is displaced, but the placenta is visualized above, it may be evidence of a pelvic tumor.

Placenta previa centralis displaces the head directly upward, and in the absence of disproportion or distended bladder, and with the placenta not visualized elsewhere, the diagnosis is probable. Frequently a soft tissue shadow can be seen producing a smooth rounded defect on the anterior wall of the gas-filled

rectum as corroborating evidence of central placenta previa. Occasionally there is indefinite visualization of the placenta above in the fundus, and the head is uniformly displaced upward. In such cases fluid in the amniotic sac from unruptured membranes may be confused with central placenta previa, but can be differentiated by palpation on rectal examination.

In a high percentage of cases, placenta previa centralis, partialis, or marginalis can be established or ruled out by the method outlined above. If the findings are inconclusive, the additional procedure of cystography can be carried out, using an aseptic injection of air or Skiodan 10 to 20 per cent into the bladder.<sup>9</sup> The urinary bladder contacts only the anterior wall of the lower uterine segment, and usefulness of the cystographic method is therefore limited to those cases with placental implantation in the anterior area. We have seldom found it necessary to utilize cystographic studies to confirm the presence of low placental implantation as the soft tissue studies are usually conclusive.

#### CONCLUSIONS

A radiographic method of determining the site of the placenta in normal and low implantations is described.

An accurate study can be obtained in the last trimester using soft tissue technic without the use of contrast media.

The importance of making the projections in the upright position is emphasized as necessary in diagnosis of placenta previa.

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Read the April Journal for the program of the 94th annual session  
Kansas Medical Society

Wichita, Kansas

May 3-7, 1953

# Cyst of the Left Adrenal Gland

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Inasmuch as cysts of the adrenal glands are not common, a report of a recent case is presented.

The patient was a 72-year-old white man who died suddenly. He was not under the care of a physician. The autopsy revealed extensive coronary atheroma with partial occlusion, a heart weighing 470 grams with a flabby musculature, and a tricuspid ring measuring 15 cm. in diameter. Consequently, cardiac collapse was regarded as the cause of death. Nothing else worth noting was present except a unilateral enlargement of the adrenal glands. The right adrenal weighed 12 grams and appeared normal.

The left adrenal was much enlarged, weighing 178 grams and including a cystic mass 6.5 cm. in diameter. The cortical tissue was unusually abundant. The cyst wall was well outlined and largely enclosed by adrenal cortical tissue. The cyst contained 75 cc. of a grummy, granular, opaque, pale yellow, semi-fluid material. Occasional streaks of blood-tinged material could be seen. Much necrotic cellular debris appeared to be present. The cyst wall was fibrous with small islands of cortical adrenal tissue incorporated. A part of the adrenal cortex was flattened over the cyst wall. Much of the adjacent adrenal cortical tissue was markedly hypertrophied. Multiple sections failed to reveal recognizable medullary tissue.

Microscopic examination showed well marked cortical hypertrophy and some adenomatoid areas. The wall of the cyst was largely fibrous in character with a ragged, roughened inner surface. It contained clumps and clusters of cortical tissue more or less

atrophied. In other areas there were masses of necrotic cellular tissue in which clusters of hyperchromatic nuclei could be recognized. Some of these were large and irregular in size and shape. In fact, the cytology and pattern suggested a broken down and degenerated pheochromocytoma with cystic autolysis. This would indicate that the cyst was the result of softening and liquefaction of an adenoma of the medullary tissue.

Of the cysts of the adrenal gland reported in the literature, the type following cystic autolysis of an adenoma of either the cortex or medulla, such as in this case, is one of its more common types. Henchen divides cysts of the adrenal glands into three groups, viz:

1. Parasitic cysts e.g. echinococcus (rare).
2. True cysts lined by either epithelium or endothelium. Epithelial lined cysts are rare. Cysts lined by endothelium are more common, often giving rise to lymphangioma or lymphangiectasis.
3. False cysts resulting from a cystic degeneration of a hematoma or of an adenoma. The incidence of this type is high, but it is difficult to determine its relative frequency since a study of reported cases frequently lacks the details to determine the origin of the cysts. For instance, Stock, in 1947, reported 50 cases in the literature, but his account leaves much doubt on the frequency of the cystic adenoma.

The clinical significance of the adrenal cyst is variable. They are more common in women than in men, and in most instances are found on the left side. The smaller cysts are often recognized as abnormal masses between the renal region and the diaphragm and in the posterior part of the abdominal cavity. They may be recognized clinically and have even been successfully removed surgically, such as the cases reported by Doran and Ballance.

Most cases were recognized at autopsy, though the larger forms were often recognized clinically. The cyst reported by Ballance was found on routine inspection while doing a laparotomy for a duodenal ulcer, and it was successfully removed surgically at a later date. Another case was found at autopsy two days after a cholecystectomy. Stock reported a cyst that was palpated and removed in a patient undergoing a Smithwick thoracolumbar sympathectomy. Another patient presented a multiglandular syndrome believed to be thyroid and parathyroid dysfunction. In still another instance, the patient exhibited shock, acute abdominal pain, and palpable abdominal tumor



Cyst of left adrenal gland

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that became apparent over a three-day period. Doran's case entered the hospital complaining of abdominal swelling and pain. Adrenal cysts are often large and massive retroperitoneal tumors, such as the case of Zuckner in which the cyst contained 2,000 cc. of clear, yellow fluid.

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## The Repair of Large Abdominal Wall Defects with Fiberglas\* Fabric\*\*

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Occasionally the surgeon is called upon to repair massive defects of the abdominal wall. Closure without tension often cannot be accomplished without the aid of autogenous tissues, metals or plastics. Foreign inert material should be used only when repair cannot be accomplished by any other method. Autogenous grafts of fascia, cutis<sup>1</sup> or whole skin<sup>2, 3, 4</sup> have been used in reconstruction, but their use is sharply limited by the size of the defect.

Metallic prostheses of silver wire coil<sup>5</sup> or filigree,<sup>6</sup> tantalum<sup>7, 11</sup> and stainless steel mesh<sup>12, 13</sup> have been used with varying degrees of success. Silver wire has been discarded because of fragmentation and its electrolytic effect. Tantalum mesh has had an extensive experimental and clinical use in repairing a wide variety of defects. Favorable reports attest to its tissue tolerance in the reconstruction of hernia,<sup>14, 16</sup> diaphragm,<sup>17</sup> chest,<sup>18</sup> abdominal wall defects,<sup>19</sup> and defects of the skull.<sup>20</sup>

Tantalum is malleable, strong, and more resistant to infection than stainless steel. It has a minimum electrolytic effect. Fibroblastic growth takes place through the interstices of the mesh, adding to the strength of the repaired area. Tantalum mesh, however, does undergo fragmentation when it is used in areas subjected to a constant shearing stress. In spite of this disadvantage, the repaired area remains strong and supple.

Fibroblastic growth does not infiltrate stainless steel mesh. A dense scar envelops the steel mesh forming a thick bursa.

A regenerated inert cellulose acetate yarn (Fortisan††)<sup>21</sup> has been used experimentally and clinically in the repair of abdominal defects. This fabric readily withstands autoclaving. A minimal tissue reaction was reported with less leukocytic infiltration around the implant as compared to an experimental control series of stainless steel mesh.

Fiberglas cloth was utilized by us as a prosthesis in repairing large abdominal wall defects both experimentally and clinically. Fiberglas is inorganic, durable, flexible and does not shrink. The tensile strength is greater than cotton or rayon. The fabric does not absorb moisture and is insoluble to organic solvents. Sterilization can be readily accomplished by autoclaving as the fiber strength begins to decrease only at temperatures of 600° F. In the manufacture of the cloth, a starch water soluble binder is applied to prevent fibers from abraiding in the weaving operation. This binder is innocuous and does not produce any untoward tissue reaction.

#### EXPERIMENTAL METHOD

Eight mongrel dogs were operated on under intravenous sodium pentothal anesthesia. In three of these animals the right anterior rectus sheath and muscle were removed (5 by 10 cm.). A single layer of Fiberglas was sutured into the defect with 4-0 interrupted black silk. The skin was closed over the Fiberglas

\* Fiberglas is the trade-mark of Owens-Corning Fiberglas Corporation, Toledo, Ohio.

\*\* This paper won the prize offered by the Kansas Chapter of the American College of Surgeons in its 1952 essay contest for interns, residents and Junior Candidates of the College.

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†† Product of the Celanese Corporation of America, 180 Madison Avenue, New York 16, New York.



without drainage. Fiberglas fabric tends to fray somewhat when cut to pattern. Prior to fixation into the defect, the edges of the cloth are folded over for 1 cm. and basted with a running locked sailmaker's stitch. This suture also gives an additional point for fixation to the surrounding tissue. In one animal both anterior recti sheaths and muscles were removed (9 by 9 cm.). The resultant defect was replaced with Fiberglas.

In four animals a full thickness of abdominal wall was removed, including the peritoneum (6 by 8 cm.). The defect was closed with a double layer of Fiberglas cloth. The skin was closed over the fabric.

All of the eight animals survived the operative procedures. They were sacrificed at monthly intervals up to the eighth month in order to observe the effects of tissue tolerance and healing.

#### RESULTS OF ANIMAL EXPERIMENTS

Clinically there was no evidence of postoperative hernia in any of the animals. The repaired areas were strong and supple. The incisional scar moved freely over the inserted cloth. The Fiberglas was well tolerated and did not spontaneously extrude. Serial sacrifices showed fibroblastic infiltration into the cloth. At the edges of the surgical defect, the surrounding tissue had grown into the fabric. No purulent exudates were present in the sacrificed animals. Minimal adhesions were present between the bowel and the Fiberglas in those animals in which the peritoneum was removed. No bowel obstruction was noticed in the series. Encouraging results from the above animal experiment led to its clinical use.

Case 1. J. F., a white, 55-year-old male, was admitted to the University of Kansas Medical Center on February 13, 1952. The patient had had a bilateral inguinal hernia for 30 years. A bilateral inguinal herniorrhaphy had been done one year previously. The left testicle and cord had been removed in performing the repair. On February 18, 1952, under spinal anesthesia, a right inguinal hernioplasty was done utilizing

a Fiberglas prosthesis for the repair. All of the tissues encountered in dissection were of poor quality. Direct and indirect herniae were present, each measuring 5 cm. in diameter. The direct sac was converted by the Hogue maneuver, and the neck of the indirect sac was tied by a purse string suture of 3-0 black silk. The excessive redundancy was amputated and the neck transfixed. A frayed conjoined tendon was sutured to the shelving portion of Poupart's ligament, mainly to obliterate space. A double layer of Fiberglas (5 by 20 cm.) was placed beneath the cord. A hiatus for the cord was made superiorly. The cloth was then sutured laterally to Poupart's ligament, inferiorly to the periosteum of the os pubis and medially to the substance of the conjoined tendon, by means of a continuous suture of stainless steel. A relaxing incision was made obliquely in the rectus sheath to allow suture of the external oblique fascia to Poupart's ligament without tension. The cord was then transplanted subcutaneously and the skin closed in the usual fashion. On March 4, 1952, the patient had a repair of the hernia on the left side. The patient was discharged on March 20, 1952.

Comment: This patient has had no evidence of recurrence nine months after operation. Fiberglas provided a ready means of reconstruction in this hernia. The tissues were of such poor quality that their use alone would have jeopardized the repair.

Case 2. I. G., a 60-year-old, colored female was admitted to the University of Kansas Medical Center on July 25, 1952. Five weeks prior to admission, she noticed a mass in the lower abdomen gradually increasing in size (8 by 10 cm.). The mass was firm, tender, inflamed and was situated between the pubis and umbilicus. A urological survey showed the dome of the bladder to be invaded with tumor. On August 5, 1952, under continuous spinal anesthesia, a full thickness of the abdominal wall, including the tumor mass, peritoneum and involved urinary blad-

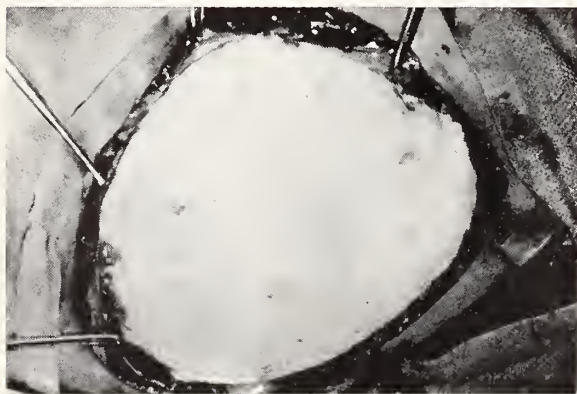


Figure 1. Abdominal wall defect (14 by 24 cm.). Bowel retained by abdominal tape.

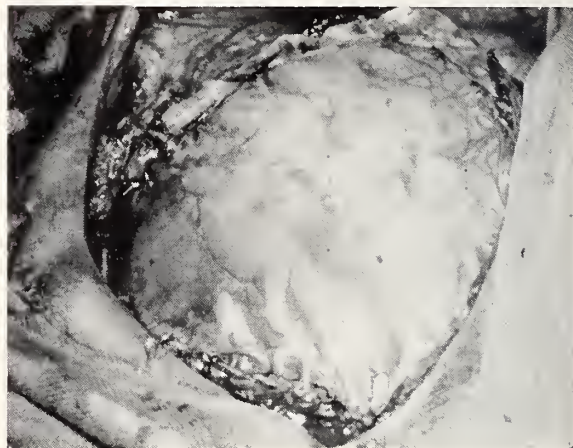


Figure 2. A two-layer closure of defect with Fiberglas prosthesis.

der, was excised en bloc. The remaining portion of the bladder was closed with a 2-0 chromic running suture and the suture line was peritonealized. The bladder was drained by a Foley bag catheter. This portion of the operation was done by Dr. T. G. Orr, Jr. A double layer of Fiberglas was used to close the defect (14 by 24 cm.) (Figures 1 and 2). Fixation was accomplished by interrupted 4-0 black silk and a peripheral continuous running steel suture. A large abdominal flap was raised, based laterally on each flank extending superiorly below the breast fold and inferiorly to the margin of the surgical defect. The elevated flap was moved distally to cover the Fiberglas prosthesis. The area of the lower chest wall and upper abdomen was covered with split thickness skin grafts (Figures 3 and 4). A Penrose drain was placed retropubically in the mid-line down to the peritoneum. Pathological diagnosis: a mucinous adenocarcinoma of the urachus. The postoperative course was stormy and complicated by electrolyte problems superimposed on an arteriosclerotic kidney. The patient died on August 17, 1952, from the effects of a vesico-peritoneal fistula, peritonitis and bronchopneumonia.

Comment: This huge defect lent itself to an easy closure by means of Fiberglas. A bipedicle flap carry-

ing its own blood supply is necessary to provide coverage for any inert foreign prosthesis. Although this patient died from the effects of peritonitis from a vesico-peritoneal fistula, the above outlined procedure points the way to handling extensive abdominal wall malignancy. At the time of postmortem, minimal fibrinous adhesions were present between the bowel and the Fiberglas.

#### SUMMARY

Fiberglas fabric provides another material for the surgeon in repairing massive defects of the abdominal wall. It is well-tolerated and easily fashioned to fit the particular needs of the moment. Even when replacing the peritoneum, no difficulty was encountered.

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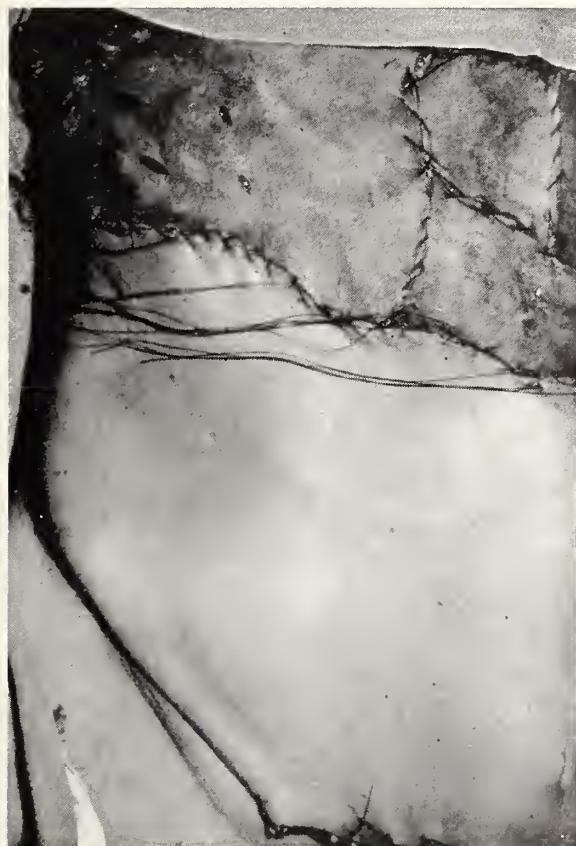


Figure 3. Right side of operative field showing migrated flap and split skin graft closure.

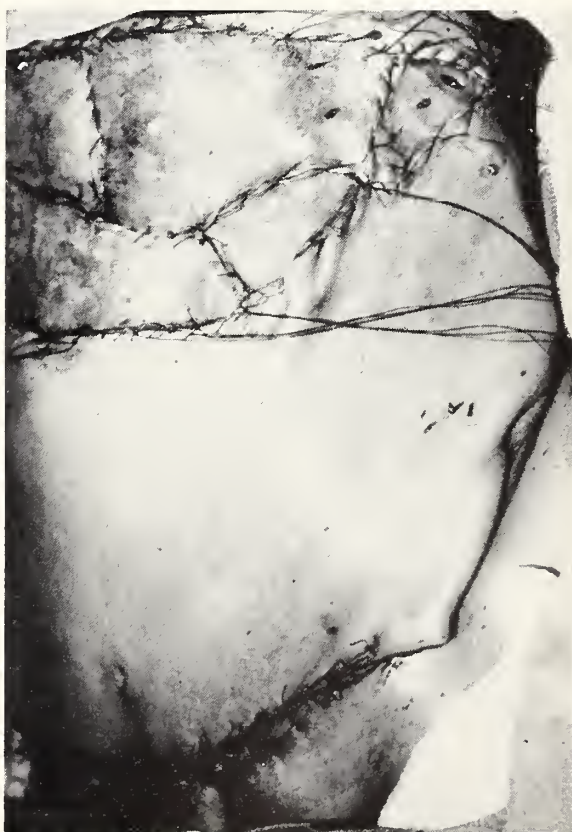


Figure 4. Repaired left side of field. Long silk sutures were tied over a stent dressing for added fixation of split grafts.



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## The Treatment of Hyperthyroidism with Radioactive Iodine, I<sup>131</sup>

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The radioactive isotopes of iodine have been used as diagnostic and therapeutic agents in thyroid disease since 1938.<sup>1, 2</sup> Several isotopes have been used, but the longer half-life of I<sup>131</sup> (eight days) has made it the agent of choice. More than three thousand reported cases of thyrotoxicosis have been treated with radioiodine, and the results indicate remission of thyrotoxicosis in approximately 96.5 per cent.

Following ingestion of any inorganic salt of iodine, the substance is absorbed nearly completely, and varying amounts are removed from the blood stream by the thyroid gland for use in the synthesis of thyroid hormone. Virtually all the remainder is excreted in the urine within 48 hours. The thyroid gland is capable of accumulating inorganic iodine in a concentration ten thousand times that of blood or any other tissue. The radioactive isotopes of iodine apparently are absorbed, metabolized and excreted in the same manner as the common form of the element. Such isotopes, moreover, can be followed in their course through body tissues because of their radioactivity.

The amount of I<sup>131</sup> taken up by the thyroid gland varies in direct proportion to the activity of the gland at the time of administration. After ingestion of a tracer dose of I<sup>131</sup>, the thyroid gland of the euthyroid individual will concentrate between 10 and 40 per cent of the dose given at the end of 24 hours. Patients with myxedema show uptake values below 10 per cent (as low as 0 per cent) and hyperthyroid patients show uptake rates above 45 per cent. Uptake rates may be estimated by the amount of gamma radiation measured by a Geiger-Mueller counter over the thyroid area compared with

the radiation from an aliquot of the same tracer material used after background counts are subtracted.

I<sup>131</sup> emits two forms of energy during its disintegration process, gamma rays and beta particles. The gamma emanations are non-particulate electromagnetic rays behaving exactly like x-rays in all physical respects, and as such they penetrate relatively great thicknesses of matter. Beta particles, on the other hand, have definite physical mass, dimensions and electrical charges, all of which properties restrict their ability to penetrate matter. Consequently, the beta particles of I<sup>131</sup> dissipate all their kinetic energy within an average radius of 2 to 3 millimeters from their point of origin, while the gamma rays may penetrate many centimeters of matter or tissue with only partial loss of their total potential of energy and contribute only approximately 10 per cent of the total radiation effect to the thyroid area and a negligible amount to surrounding structures. Thus, the majority of the therapeutic effects of radioactive iodine are produced by the beta particles.

This explains why doses of radiation estimated at approximately 10,000 roentgens equivalent physical can be delivered to the thyroid cells without appreciable radiation effects to surrounding structures. For example, the parathyroid glands are effectively shielded from the beta particles by the thin capsule surrounding them, and other contiguous structures in the neck escape damaging radiation effect. A single case of temporary hypoparathyroidism has been reported following radioiodine therapy.<sup>3</sup> Hypocalcemic tetany occurred in this case, a 14-year-old boy, 10 weeks after a therapeutic dose of 4 millicuries of I<sup>131</sup>. No other cases have been reported to our knowledge, even in thyroid carcinoma where very large

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doses are given and depression of bone marrow and ovarian function has been observed.

The gamma rays, however, by virtue of their ability to penetrate matter, make possible the measurement of radioactive iodine in tissues since they can be detected at considerable distances by means of the Geiger-Mueller counter.

#### METHODS AND MATERIAL

Since May, 1950, 121 patients have been treated with  $I^{131}$  at the University of Kansas Medical Center. Of these, nine patients were treated for carcinoma of the thyroid gland without hyperthyroidism; one patient had heart disease and no hyperthyroidism; the remaining 111 patients were considered to have thyrotoxicosis after clinical appraisal. Fifty of these have been followed for periods varying from 6 to 26 months, and they form the basis of this report. The remaining 61 patients have been treated within the six-months period immediately prior to this report or have been lost to follow-up. Ages of the 50 patients followed six months or longer ranged from 19 to 73 years. Forty-five were above 35 years of age.

Various objective tests of thyroid function were made in each case, including basal metabolic rate, serum cholesterol, serum protein-bound iodine, and  $I^{131}$  uptake rate, although all of these studies were not done in each patient. The final diagnosis of hyperthyroidism was based on the clinical impression in conjunction with laboratory procedures.  $I^{131}$  uptake studies were done in each case before treatment and at varying intervals following treatment.

A simple direct counting method was used in determining the percentage uptake of  $I^{131}$ . The count from a conventional Geiger-Mueller tube 19 centimeters from the patient's thyroid, 24 hours after administration of a 0.050 millicurie tracer dose, was compared to the count of an identical 0.050 millicurie sample after room and biological background corrections were made. From observations early in our experience with  $I^{131}$ , excretion studies and effective half-life determinations were found to contribute no additional accuracy in uptake studies or therapeutic management of hyperthyroidism. This does not apply to carcinoma of the thyroid.

Hospitalization is not necessary in carrying out diagnostic or therapeutic procedures with  $I^{131}$ , and the majority of patients were treated on an ambulatory basis as outpatients.

The determination of an optimal dose of  $I^{131}$  for a given patient is one of the major problems in this type of treatment.<sup>8</sup> In the surgical treatment of the diffuse toxic goitre, many authorities believe that as much thyroid tissue as possible should be removed, leaving only enough to insure preservation of the parathyroid glands. In clinics where this attitude pre-

vails, the incidence of postoperative recurrent hyperthyroidism is effectively reduced, but the incidence of myxedema increases. If this attitude of near-total ablation of thyroid tissue were applied to  $I^{131}$  therapy in diffuse toxic goitre, then excessive dosage could be administered and the necessity for re-treatment could be reduced, but myxedema could be expected to occur more commonly, and other tissues of the body would be subjected to an increased danger of radiation effect.

By attempting to calculate the optimal dosage according to uptake rate, gland size, and retained dose per gram of thyroid tissue, a fairly satisfactory estimate can be made in the majority of cases. Other methods of calculation involving considerations of effective half-life are time-consuming and do not seem to contribute to accuracy. At present, our plan is to administer a dose which will result in a retained amount of 0.120 to 0.150 millicuries per estimated gram of thyroid tissue in diffuse toxic goitre, and 0.250 to 0.300 millicuries per gram to the nodular toxic goitre. Inexperience and a conservative attitude caused us to use less than optimal dosage in many of the earlier cases. Consequently, re-treatments are more numerous in these patients.

#### RESULTS

In the group of 82 patients followed for at least two months after one or more treatments, remission of thyrotoxicosis occurred in 79 patients (96 per cent) (Table 1). When the group is limited to

TABLE 1  
THERAPEUTIC RESULTS WITH  $I^{131}$  IN 111 CASES  
OF HYPERTHYROIDISM

Remission of thyrotoxicosis .....	79
Followed 2 months .....	9
Followed 2 to 6 months .....	23
Followed 6 to 12 months .....	17
Followed 12 to 27 months .....	30
Total .....	79
Unsatisfactory results .....	3
X-ray therapy 2 months following $I^{131}$ treatment ....	1
Thyroidectomy 8 months following $I^{131}$ treatment ....	1
Thyroidectomy 12 months following $I^{131}$ treatment ....	1
Total .....	3
Results not evaluated .....	29
Less than 2 months follow-up (recently treated) ....	19
Lost to follow-up .....	10
Total .....	29
Total .....	111

those with six months or more follow-up, remission occurred in 48 of 50 patients (96 per cent) (Table 2). One patient was clinically euthyroid at two months following therapy, at which time she showed 10 per cent uptake of a tracer dose of  $I^{131}$ . Three months later, she was clinically in a recurrent state of hyperthyroidism and showed an uptake rate of 37 per cent. She was re-treated with good results.

TABLE 2  
RESULTS IN 50 PATIENTS FOLLOWED FOR  
6 TO 27 MONTHS

		Patients	
		No.	%
Clinically Euthyroid	.....	41	82
Clinically Myxedematous	.....	7	14
Treatment Failure*	.....	2	4
		50	100

\* Both patients underwent thyroidectomy within 12 months following I<sup>131</sup> therapy.

This is the only patient in the entire group in whom an I<sup>131</sup> uptake below 20 per cent was recorded at the two-months post-treatment period and who later showed a recurrence of hyperthyroidism. Clark et al,<sup>4</sup> in reporting I<sup>131</sup> therapy in 384 cases of thyrotoxicosis with 6 to 60 months follow-up, found no case of recurrent hyperthyroidism in patients who had been observed to be in a remission for four months after treatment.

Total doses in this group ranged from 3 to 29 millicuries in the diffuse goitres, with an average dose of 10.5 millicuries. Our experience with toxic nodular goitre has been similar to the published experience of others.<sup>4, 5, 6, 7</sup> In these patients, the dose varied widely and the necessity for re-treatment was more common. The six cases of nodular toxic goitre required from 9 to 67 millicuries total dosage, the average being 29 millicuries.

When the size of the initial dose of I<sup>131</sup> is compared to the results obtained (Tables 3 and 4), approximately one-third of the patients receiving less than 10 millicuries as an initial dose, or less than 0.140 millicurie per gram of estimated thyroid weight, did not show a sustained remission of thyrotoxicosis. Slightly more than one-fourth of the

TABLE 3  
RELATION OF SIZE OF INITIAL DOSE (MILLCURIES PER GRAM) TO RESULT

Initial Dose in mc/gram of Thyroid Tissue	Euthyroid	Hypo- thyroid	Total Remissions	Required Re-treat- ment
Less than 0.100	45%	11%	56%	44%
0.100-0.140	65%	8%	73%	27%
0.140-0.180	40%	40%	80%	20%
Over 0.180	84%	16%	100%	0%

TABLE 4  
RELATION OF SIZE OF INITIAL DOSE TO RESULT

Initial Dose in millicuries	Euthyroid	Hypo- thyroid	Total Remissions	Required Re-treat- ment
3 - 6	40%	15%	55%	45%
7 - 10	81%	6%	87%	13%
11 - 17	76%	12%	88%	12%
18 - 27	67%	33%	100%	0%

patients receiving more than 10 millicuries, or more than 0.140 millicurie per gram of thyroid weight, have become myxedematous.

It is frequently difficult to classify accurately the recurrent goitre as either "diffuse" or "nodular" toxic goitre. When thyrotoxicosis recurs following thyroidectomy, the regrowth of thyroid tissue is apt to occur in a nodular fashion. This type of gland, however, cannot be considered as identical with the toxic adenoma so far as its response to I<sup>131</sup> therapy is concerned. Our series of recurrent toxic goitres is too small to permit any conclusions, but it is our impression that they should be dealt with as diffuse toxic goitres.

In a number of patients, post-treatment observation at two to four months revealed clinical evidence of mild to moderate myxedema, and in 19 patients the I<sup>131</sup> uptake values were in the myxedema range (below 10 per cent). Fourteen of the 19 recovered from this transient hypothyroid state and were considered euthyroid when last seen. Seven patients were considered to be clinically hypothyroid after six months or more follow-up. Comparison of the clinical appraisal of the patients to the I<sup>131</sup> uptake rate is presented in Table 5. We feel that thyroid extract should

TABLE 5  
CLINICAL APPRAISAL COMPARED WITH FOLLOW-UP  
I<sup>131</sup> UPTAKE RATE 6 TO 27 MONTHS AFTER  
LAST TREATMENT

I <sup>131</sup> Uptake	Euthyroid		Myxedema	
	No.	%	No.	%
Below 10%	5	10	3	6
10 to 35%	28	56	0	0
Not tested	8	16	4	8
	41	82	7	14

not be administered to patients showing post-treatment hypothyroid states unless they fail to recover from severe myxedema after eight months observation, since it has been shown that administration of thyroid extract tends to depress thyroid activity. There is no evidence in this series that re-treatment increases the incidence of myxedema. In the patients receiving more than one treatment, 13 per cent were considered hypothyroid after remission of thyrotoxicosis; in those receiving only one dose of I<sup>131</sup>, the incidence of hypothyroidism was 14 per cent.

Exacerbation of the thyrotoxic state in the immediate post-treatment period ("thyroid storm") has been reported following I<sup>131</sup> therapy.<sup>9</sup> This was observed in a mild form in one of our patients, but required no specific therapy other than barbiturates and subsided within a few days. A few patients have complained of slight tenderness over the thyroid gland in the immediate post-treatment period. This reaction is, perhaps, due to a mild form of irradiation thyroiditis.



Exophthalmos was present in 29 of 111 cases (27 per cent). Seventeen of these cases have been followed at least six months. Seven have shown marked improvement in the exophthalmos; slight improvement occurred in four, and no change was observed in six. None of these cases without exophthalmos have developed it following treatment, and there has been no exaggeration of already existing exophthalmos.

Failure of a single treatment to produce a satisfactory remission should not be considered as a treatment failure, but rather both physician and patient should be aware at the outset that one or more re-treatments might become necessary in order to bring about a sustained remission. This is especially true in nodular toxic goitre. One can hope that further experience will reduce the necessity for more than one treatment. Follow-up observations should be made at specified periods following treatment. Our present plan is to re-evaluate the patient clinically and by  $I^{131}$  uptake rates at two months and six months after treatment and then annually. If a remission has not occurred, retreatment is administered, the dosage being calculated in the same manner as at the original treatment.

Of the three patients listed as treatment "failures," one was still in a hyperthyroid state two months following therapy, at which time x-radiation was administered rather than re-treatment with  $I^{131}$ . The second patient had bronchiectasis and had had lipiodol instilled into the bronchial tree prior to treatment with  $I^{131}$ . Perhaps because of the lipiodol, the  $I^{131}$  uptake was only 24 per cent. After two attempts to treat her with  $I^{131}$  in spite of the low uptake, she remained in a hyperthyroid state and underwent thyroidectomy. The third patient had a large nodular gland with substernal extension. She had received Lugol's solution until one month prior to admission to the University of Kansas Medical Center, at which time she showed 14 per cent uptake of a tracer dose of  $I^{131}$ . She was given a therapeutic dose of 20 millicuries of  $I^{131}$  which probably delivered less than 0.010 millicurie per gram of thyroid tissue. She continued in a hyperthyroid state, and thyroidectomy was performed elsewhere approximately 12 months later. The dosage was much too low to expect a good result in the latter two cases, and the clinical situation demanded effective control of the thyrotoxicosis without further delay. These cases illustrate the fact that failures will occur in  $I^{131}$  therapy in cases showing unmistakable evidence of thyrotoxicosis in whom the  $I^{131}$  uptake rate has been depressed to low levels by recent administration of iodine-containing medications or diagnostic contrast media, such as lipiodol or the substances used in cholecystography and urography.

If antithyroid drugs have been administered prior to treatment, they should be interrupted for seven days before a tracer study is done. These compounds should not be administered in the immediate post-therapy period since they are known to increase hormone release from the thyroid gland and consequent reduction of  $I^{131}$  content. In severely toxic patients where immediate control of thyrotoxicosis is imperative, antithyroid drugs may be administered beginning on the sixth post-treatment day. As thyrotoxicosis comes under control, the antithyroid medication should be gradually withdrawn. We have noted clinical improvement to occur usually between four and six weeks, and believe maximal  $I^{131}$  effect to be present at eight weeks. In the few cases in this series that were given post- $I^{131}$  therapy antithyroid medication, the drug was discontinued before six weeks had elapsed.

#### SUMMARY

1. One hundred eleven patients with hyperthyroidism were treated with  $I^{131}$  at the University of Kansas Medical Center during the period from May 1, 1950, to December 31, 1952. Fifty of these patients have been followed at least six months since their last treatment.
2. Remission of thyrotoxicosis occurred in 96 per cent of the group with at least six months follow-up.
3. Clinical myxedema occurred in 14 per cent of patients.
4. Failure of treatment in two patients (4 per cent) is attributed to previous administration of iodine-containing materials. Attempts at  $I^{131}$  therapy were ill-advised in these patients.
5.  $I^{131}$  uptake rates below 20 per cent at the two months follow-up period predicted sustained remission of thyrotoxicosis in all but one patient.
6. Re-treatment is frequently necessary and apparently does not increase the incidence of post-treatment myxedema.

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## PRESIDENT'S PAGE

DEAR DOCTOR:

We have been much interested in reading about changes which are proposed for the Taft-Hartley Act. It seems that the present act is to be completely worked over. Mr. Taft himself has introduced five bills which include sixteen proposed changes. Others will be added, no doubt, to swell the total.

There are some conclusions which seem to be in order from the ordinary citizen's viewpoint. They may have some value and they seem not to be entering too much into the thinking of the principals in the matter.

The first of these is that apparently the government has maneuvered itself into a position whereby it is obliged to enforce laws which would protect labor leaders who have, in effect, usurped the powers of government. Whether these powers have been usurped or granted makes little difference—the fact remains that under such laws a labor leader has the right to force the nation to submit to his wishes, even when such action might mean unemployment on a mass basis. Since force is not an ingredient of democratic government and, except in rare instances, should have no part in democratic rule, this is not an enviable position for the government of a democracy to have to assume.

The second observation is that in arriving at such an impasse in labor matters our experts have once again lost sight of certain fundamental concepts which are guaranteed by the Constitution, which have been accepted as part of the American tradition, and which are, we think, the answer to all labor-management disputes.

In a democracy no one has the right to tell a person when he can or cannot work without first obtaining his consent to such an agreement. This principle was accepted in America with the abolition of slavery.

In a democracy an individual's abilities are properly his own personal property and as such cannot be encroached upon by another party without his consent. Every individual has the right to dispose of his abilities as he sees fit, i.e., in an open and free market.

The only price that can honestly be put upon one's labor is what that commodity will bring in the free market. Any other mechanism to raise or lower a commodity is artificial, unnatural, and immoral.

We believe that the only fair and honest answer to the question of labor-management problems and even the settlement of strikes is the application of the principle of the rights of the individual as set out in the Constitution and the resumption of the operation of the free market.

A handwritten signature in dark ink, appearing to read "Warren E. Hearnes". The signature is fluid and cursive, with a large, stylized initial "W" and a long, sweeping underline that extends to the right.

## EDITORIAL COMMENT

### SALUTE TO MEDICAL SCHOOL

This, the Seventh Annual University of Kansas School of Medicine issue of the JOURNAL, is offered as a salute to our state medical school. Although a recognition tendered for the seventh consecutive year might seem to have become routine, in this case it is not. It is a sincere tribute to an organization that is progressive, alert, and successful in the ideals to which it is dedicated.

It is unnecessary now to report on progress made in recent years since an article on the subject by Dr. W. Clarke Wescoe, dean of the school, was published in the February issue of the JOURNAL. That article dealt with increased enrollment, expansion of the postgraduate education program, activities in research, and needs of the immediate future.

The University of Kansas School of Medicine, which has inaugurated programs that have been copied throughout the country, is an object of pride for citizens of this state. It has received wide recognition from the press and from professional and non-professional individuals and groups. The JOURNAL welcomes the opportunity of adding its congratulations and encouragement by devoting this issue to the school.

In the scientific section there are papers from the following departments: radiology, cardiovascular studies, pediatrics, internal medicine, surgery, and pathology. In addition, the school has provided a case report that was the subject of a clinical pathological conference and a thesis written by one of the senior students. Dr. Glen R. Shepherd, assistant to the dean, in his capacity as an associate editor of the JOURNAL, assembled the material for the issue.

### ANNUAL MEETING, MAY 3-7, 1953

The annual session of the Kansas Medical Society, to be held at the Forum at Wichita, May 3-7, promises to be an outstanding event since it will mark two occasions, the 94th anniversary of the state society and the 50th anniversary of the host group, the Sedgwick County Medical Society.

Committees in Wichita have been working for months to plan a scientific program and a schedule of entertainment that will be of interest to all. Chairmen of the different groups are as follows: General Chairman, Dr. Edward S. Brinton; Scientific Program, Dr. James B. Fisher; EENT Program, Dr. Norton L. Francis; Entertainment, Dr. Lester K. Nix; Reception, Dr. Lloyd P. Warren; Commercial Exhibits, Dr. Robert K. Purves; Scientific Exhibits, Dr. Bert E.

Stofer; Publicity, Dr. Donald P. Trees; Auxiliary, Dr. William H. Browning.

The scientific program, which makes up the foundation for the annual meeting, will include guest speakers who are outstanding in their specialties. Separate sessions will be held for those practicing in the EENT specialty only. The list of scientific speakers includes the following: Dr. Charles P. Bailey, Philadelphia, thoracic surgery; Dr. Elmer Belt, Los Angeles, urology; Dr. Arthur C. Curtis, Ann Arbor, dermatology and syphilology; Dr. Harold L. Hickey, Denver, ENT; Dr. C. Gordon Johnson, New Orleans, obstetrics and gynecology; Dr. Peter C. Kronfeld, Chicago, ophthalmology; Dr. Frank R. Lock, Winston-Salem, obstetrics and gynecology; Dr. Edward B. D. Neuhauser, Boston, radiology; Dr. William D. Robinson, Ann Arbor, medicine; Dr. Edward H. Ryncarson, Rochester, medicine; Dr. R. L. Sanders, Memphis, surgery; Dr. Hugh Smith, Memphis, orthopedic surgery; Dr. Orvar Swenson, Boston, pediatric surgery.

The annual banquet on Wednesday evening, May 6, will be the most important social event of the session. An elaborate program is being prepared. Other features of the meeting are sports events for golfers and marksmen, a tournament banquet, scientific movies and exhibits, commercial exhibits, meetings of specialty groups, and two meetings of the Society's House of Delegates. The Kansas Medical Assistants' Society will hold its annual convention on May 3 and 4, and the Woman's Auxiliary to the Kansas Medical Society will meet on May 5 and 6.

An innovation this year will be a health forum for approximately 5,000 invited guests who are not members of the medical profession. The program will be presented in the Forum, and the guests will be permitted to view the scientific and commercial exhibits as they enter the building. This plan, devised as a public relations project, is expected to be a popular feature of the meeting.

Members of the Kansas Medical Society are urged to make hotel reservations immediately by writing directly to the hotel of their choice in Wichita. The larger hotels there are the Allis, the Broadview, and the Lassen. It is believed that accommodations will be available for all who wish to attend, but only those who make early reservations will be assured of the desired type and location of rooms.

### THE PROMISE OF GAMMA GLOBULIN

The development of a practical preventive for poliomyelitis, featured prominently in the lay press in 1952, has been evaluated for the medical profession by the National Foundation for Infantile Paralysis. Although optimistic about the probability of finding a safe, sure, long lasting immunizing agent

some time in the future, the Foundation refers to its 1952 experience with gamma globulin as "a beginning in the development of a practical preventive."

Among significant research findings during the year, according to the Foundation, was the discovery by Dr. Dorothy Horstman of Yale and Dr. David Bodian of Johns Hopkins that poliomyelitis virus could be found in the blood stream of cynomolgus monkeys and chimpanzees four to six days after they had been fed polio virus. This research showed that during the brief viremia phase, antibodies were developed in the blood. In a few animals sufficient antibody developed to prevent paralysis. In others, the amount of antibody was either insufficient or its development was too slow to ward off paralysis. However, by slightly increasing the amount of antibody present in the blood, paralysis could be prevented until the animal had time to develop its own active immunity.

Viremia in human beings has been observed on only two occasions. Yet it was felt that because of the similarity between the laboratory disease in animals and the naturally acquired disease in man, it might also be a constant part of the human disease picture that polio virus regularly circulates in the blood a week or more before the onset of paralysis. If this were true, by giving antibodies to human beings just prior to or just after infection, it might be possible to prevent the development of paralysis.

This hypothesis was tested during polio epidemics in Utah, Texas and Iowa, with 54,772 children between the ages of one and eleven taking part. Half received injections of gamma globulin and half an innocuous substitute. Gamma globulin containing antibodies against all three immunological types of polio virus was obtained from the American National Red Cross and was prepared from blood collected during World War II from tens of thousands of donors in different areas of the country.

A preliminary report was issued by Dr. William McD. Hammon of the University of Pittsburgh Graduate School of Public Health, who conducted the study. Ninety paralytic cases developed among the 54,772 children. Twenty-six cases occurred in children who received gamma globulin injections, with 64 from the other group. The figures emphasize that marked protection did not begin until the second week after inoculation, lasting through the fifth week. During the second week, the number of polio cases in the gamma globulin group was three; in the control group, 23. From the second week through the fifth week, only six cases occurred in the gamma globulin group, while 38 appeared in the control group.

In the first week little, if any, protection was observed. However, the cases were mild, and within 30 days half had completely recovered. Dr. Hammon believes this indicates that gamma globulin may, dur-

ing the late stages of the incubation of polio, modify the severity of the disease although it fails to give complete protection.

This preliminary report points up two needs for the future, the securing of large amounts of gamma globulin and the continuation of research on the disease. Both projects are currently receiving attention with the hope that ultimately the disease, which struck 1,716 victims in Kansas in 1952, will be conquered.

#### ANNUAL MID-WEST CANCER CONFERENCE

Plans are now being completed for the Fifth Annual Mid-West Cancer Conference to be held at the Broadview Hotel, Wichita, April 2 and 3. Scientific sessions will fill both days, and an informal dinner meeting will be held on Thursday evening, April 2. Dr. Charles H. Miller, Parsons, will preside at the dinner, and Dr. Cornelius P. Rhodes, New York City, will speak on "Horizons in Cancer Research."

The scientific program will be presented by the following guest speakers: Dr. William Boyd, University of British Columbia, Vancouver, B. C.; Dr. Paul C. Bucy, professor of neurology, University of Illinois College of Medicine; Dr. Ernest M. Daland, chief of staff of Pondville Hospital, Walpole, Massachusetts; Dr. Juan A. del Regato, director of Penrose Cancer Hospital, Colorado Springs; Dr. Cushman D. Haagensen, associate professor of clinical surgery, Columbia University, New York; Dr. Henry S. Kaplan, professor of radiology, Stanford University Hospitals, San Francisco; Dr. Cornelius P. Rhodes, director of Memorial Hospital, New York; Dr. Isidore Snapper, director of medical education, Mt. Sinai Hospital, New York.

Dr. Karl E. Voldeng, Wellington, will preside at the Thursday morning program, which will begin at nine o'clock and continue as follows:

A Concept of Cancer .....	Dr. Boyd
Research in the Chemical and Biological	
Therapy of Cancer .....	Dr. Rhoads
Clinical Management of Lymphomas	
and Leukemia .....	Dr. Kaplan
The Treatment of Cancer of the	
Skin .....	Dr. del Regato

During a luncheon session, with Dr. J. P. Berger, Wichita, presiding, motion pictures on cancer subjects will be shown.

On Thursday afternoon Dr. Richard E. Speirs, Dodge City, will preside at the following program:

Early Signs and Symptoms of Brain	
Tumors .....	Dr. Bucy
The Spread of Tumors .....	Dr. Boyd
Cancer of the Lip, Tongue, and Jaw, Dr. Daland	



### Tumors of the Spinal Cord and Their Differentiation from Degenerative Lesions, Dr. Bucy

A symposium on cancer of the breast will make up the program on Friday morning. Dr. Willard J. Kiser, Wichita, will preside. The following papers will be given:

- The Diagnosis of Tumors of the Breast ..... Dr. Haagensen
- The Role of Radiotherapy in the Treatment of Cancer of the Breast .... Dr. del Regato
- The Treatment of Breast Carcinoma ..... Dr. Haagensen
- The Palliative Treatment of Carcinoma of the Breast ..... Dr. Daland

Dr. Larry E. Vin Zant, Wichita, will preside at the Friday luncheon meeting, and Dr. Horace M. Wiley, Garden City, will preside in the afternoon. The program to be given includes:

- Endocrinological and Metabolic Changes Following Castration and Testosterone Treatment for Breast Cancer ..... Dr. Snapper
- Panel Discussion and Question Period on Cancer of the Breast ..... Dr. Daland, Dr. del Regato, Dr. Haagensen, Dr. Snapper
- The Diagnosis of Cancer in the Gastro-intestinal Tract ..... Dr. Kaplan
- Recent Advances in Treatment of Multiple Myeloma and Other Malignancies .. Dr. Snapper

### KANSANS GUESTS AT RICHMOND CONFERENCE

Dr. and Mrs. Henry E. Haskins of Kingman will be Kansas' guests of honor at the First Western

Hemisphere Conference of the World Medical Association, to be held in Richmond, Virginia, April 23 to 25, 1953, in observance of the lengthening of life and the constant improvement of human health.

Governor Edward F. Arn nominated Dr. and Mrs. Haskins for the honor of attending, at the invitation of Governor John S. Battle of Virginia. The governor of each state was asked to appoint a physician who will reach the age of 75 during 1953. During the conference each physician will tell of medical advances that have taken place during his lifetime.

Dr. Haskins has been in general practice for more than 50 years, beginning his medical service immediately after graduation from the Beaumont Hospital Medical College, St. Louis, in 1901. He was born in 1878, the year Robert Koch published his history-making treatise on causes of infection.

Dr. Louis H. Bauer, president of the American Medical Association, will greet the guests at the Richmond conference, and other addresses will be given by leaders of Latin American medical societies. The program will also include scientific sessions and tours of historic sites in Virginia. All expenses of the conference are covered by a grant from A. H. Robins Company, Inc., Richmond pharmaceutical house founded 75 years ago.

"Alcohol is involved in thousands of deaths, the official records of which make no reference to it," the American Business Men's Research Foundation reported recently in making public a study of vital statistics records. The records, according to the foundation, show that in 67 varieties of disease alcoholism has been found to be a factor.

### SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

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Robert Weimer, M.D.  
206 Third Street  
Fort Leavenworth, Kansas

# Clinical Pathological Conference\*

## CASE PRESENTATION

This was the first KUMC admission for this 23-year-old white man. Chief complaints were "spells" for two and one-half years, "weakness" for one month, and "stomach hurts" for one week.

The present illness began suddenly in February, 1950, with a tingling sensation from the waist up, followed by ability to hear people talk to him but inability to answer, for at least two or three minutes; then, when able to talk, the speech was irrelevant and disjointed. The patient had two to three such attacks per week.

In March, 1950, he was seen in the outpatient department. During this examination the patient had an episode of unresponsiveness with grimacing and flexion of the right arm in tonic contraction. On recovery there was a period of five minutes when speech was irrelevant and a five-minute period of retrograde amnesia, but no post-seizure sleeping.

Physical examination at this time was negative except for absent right abdominal reflexes. An EEG done at this time revealed diffuse disturbance in cerebral cortical rhythm with right temporal parietal preponderance.

The patient was then placed on anti-convulsive medications with varying success. During the ensuing year seizures increased in frequency and intensity, and consisted of aura, blurring of vision, weakness, occasional unconsciousness, and unilateral right-sided convulsive movements.

The patient's family reported urinary incontinence and unilateral left-sided perspiring with these seizures, which showed a wide variation in severity. Six weeks before this admission the patient had virus pneumonia and was given chloromycetin, and during this time he was free of the attacks while hospitalized.

In the past month there had been an increase in seizures, with two to three occurring daily. All had been accompanied by loss of consciousness and minimal right-sided convulsive movements. There had been a continuous increase in fatigability and muscular weakness. For the week previous to admission the patient had complained of mid-abdominal pain of a dull, constant nature.

The past history was non-contributory, although the patient had had a blow to the right occiput with unconsciousness but no sequelae at age eight, and an appendectomy in 1951.

The family history was non-contributory.

Symptom review revealed nocturnal enuresis twice in the past two months and a present diffuse aching about the knees and elbows with their movement.

Physical examination showed a tall, thin individual who appeared the stated age but did not appear either acutely or chronically ill. Blood pressure was 120/80, pulse 96, temperature 99.4, respirations 20. Head examination was not remarkable. The fundi were negative. The neck was not remarkable, and the chest was clear to percussion and auscultation. The heart presented a regular sinus rhythm without murmurs and was not enlarged. Neither the abdomen nor the extremities were remarkable. Neurological examination was negative except for an intermittently absent right abdominal reflex.

Laboratory data: Urinalysis—acid, 1.017 sp. gr., faint trace of albumin, occasional granular casts, 3 to 4 WBC per high power field, no sugar. Complete blood count showed 5,000,000 RBC, 9,000 WBC, 14.2 gms. hemoglobin and a differential count of 86 per cent polys., 8 lymphocytes and 6 monocytes. Serology was negative. Blood chemistry showed the NPN 33, creatine 1.3, sugar 75 mgm. per cent. The glucose tolerance curve was normal. Heterophile agglutination was positive in 1 to 4 dilution. Skin tests showed tuberculin negative, histoplasmin positive, blastomycin negative and coccidioidin negative. Spinal fluid examination showed no cells, sugar 72, chloride 750, serology negative, protein 34 mgm. per cent, and culture negative. Urine culture showed a moderate growth of pseudomonas. Sputum cultures revealed no acid fast bacteria, while the nose and throat cultures showed only the usual flora. Routine agglutinations were negative in all dilutions. Blood cultures were negative in 10 days.

Following admission, the patient was taken off anti-convulsive medication until after an electroencephalogram was done. During this period, the patient had 5 to 15 mild epileptic episodes, each of one to two minutes duration, during which there was unresponsiveness, flickering of the eye lashes, and at times a withdrawing of the right arm and sometimes the leg. The patient stated that he was not unconscious during these periods but simply could not respond. A low-grade fever continued following admission.

On the ninth day after admission an exploratory craniotomy was done. The immediate postoperative course was smooth and the patient responded. On the tenth hospital day the patient became unresponsive, and a ventricular puncture was done. The patient responded but was disoriented. Intermittent periods of central nervous system irritability and depression occurred. Postoperative therapy consisted

\* From the University of Kansas Medical Center. Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the Departments of Medicine, Neurosurgery, Pathology, and Radiology, and the junior and senior classes of medical students.



of close nursing care, caffeine sodium benzoate, and parenteral fluids.

The patient remained febrile. The temperature spiked to 105°, blood pressure started falling, and the patient became unresponsive and expired at 6:30 on the 13th hospital day.

Dr. Mahlon Delp (Medicine): Any questions of Dr. Gunn?

Question: Were there any personality changes noted at all during his illness?

Dr. C. G. Gunn (Resident in Medicine): None were noted.

Question: Was the spinal fluid pressure recorded?

Dr. Gunn: It was initially 240 mm. After 10 cc. of fluid was removed, it fell to 125 mm.

Question: In the recumbent position?

Dr. Gunn: Yes.

Question: Was this patient righthanded or left-handed?

Dr. Gunn: Righthanded.

Question: Was there any history of infection at the onset two and a half years ago?

Dr. Gunn: No.

Question: Was a pneumoencephalogram done?

Dr. Gunn: Yes.

Question: Was the ventricular puncture bloody?

Dr. Gunn: No.

Question: Did the patient have any muscle weakness during his neurological examination?

Dr. Gunn: None.

Dr. Delp: Dr. Tice, may we see the x-rays?

Dr. Galen M. Tice (Radiology): Chest films and fluoroscopy were normal in all respects. Examination of the esophagus, stomach and duodenum using a barium meal, fluoroscopy and spot films, showed nothing unusual. Routine films of the skull didn't tell much. They did not reveal evidence of increased pressure or abnormal calcification. An arteriogram was done of the left side. This is the most revealing film. It shows the vessels displaced away from the base of the skull farther than they should be.

This ventriculogram film is, I think, our most important film. It shows displacement of the ventricle to the right, localizing the lesion on the left side. By putting these two together it is obvious that there was a space-taking mass on the left side, in the temporal area.

Dr. Delp: Mr. Billingsley?

#### DIFFERENTIAL DIAGNOSIS

Mr. Thaine E. Billingsley (Senior Student): The history of this patient makes me want to know three things: (1) What was the disease? (2) Where was the disease? (3) Why did the patient die?

The x-rays show an intracranial space-taking lesion. I'll mention briefly some of the diagnostic possibilities.

A localized meningitis could result in a history very much like this patient had. A subdural hematoma could very doubtfully exist for two and one-half years. Meningeal vascular syphilis is uncommon in the presence of negative blood serology and negative spinal fluid. A gumma is sometimes found in the absence of serological and spinal fluid changes. I think it would have to be seriously thought of, but I don't think this patient's disease was syphilitic.

Cerebral hemorrhage can be found in the young adult. However, the onset in this case was not typical of that. That is true also of cerebral embolism and cerebral thrombosis. With gradual progression of symptoms, one would not think of thrombosis.

Tuberculoma may be found in the absence of any signs of tuberculosis.

Schistosoma japonicum can cause granulomatous brain lesions. We have no history of his having been in the Far East, so I mention that only in passing.

Lead poisoning can produce convulsions, but there is no history of lead exposure. I believe this patient was a farmer and probably did not have any opportunity of developing lead poisoning.

A hemangioma would be present from birth, would probably produce an audible bruit, and probably would not be progressive, so we can rule that out.

Idiopathic epilepsy must be thought of in any type of convulsion, but these were definitely focal convulsions. They began at rather a late age for idiopathic epilepsy.

The x-rays indicate a space-taking lesion. In my estimation, this all boils down to something like a brain tumor, progressive over a period of two and a half years. This could produce focal seizures. The things militating against brain tumor are the absence of papilledema and the absence of headache. However, both of these may be absent in a brain tumor. I think this patient had a brain tumor.

In differentiating brain tumors, I thought of three types: glioma, meningioma, and metastatic carcinoma. I would like to omit consideration of a metastatic lesion, since it would have been symptomless.

Meningioma typically has a long chronic course. Two and a half years is pretty chronic. Meningioma, in 25 per cent of cases, produces some changes in the bone overlying the meningioma, which we do not have here. This patient did have an injury many years ago—15 years ago—so we have to consider meningioma, but, having considered it, I'll pass on to glioma, which I think he had.

The gliomas are the most common of the brain tumors. They infiltrate widely. I think the symptoms here indicate a widely infiltrating tumor. Certain of them have a very rapid course, but certain others do not.

In thinking of the gliomas, I'd like to mention

first medulloblastoma, which is rare in adults, more common in children, and usually has a more rapid course than in this case.

Glioblastoma multiforme is usually found in persons over 35 years of age, and rarely is found in young adults or children. It is rapidly growing, very malignant, and nearly always produces headache and increased pressure signs, neither of which this patient had.

Oligodendroglioma is a rare tumor, being found in about one per cent of brain tumors. A ten-year course is common, and a two and a half-year course is not at all uncommon. I don't think it can be ruled out in this case because it often begins with epileptic attacks. Increased pressure signs are absent.

I cannot rule out ependymoma or oligodendroglioma.

Regarding astrocytoma, authorities give the average duration of symptoms before the patient sees the surgeon as 31 months. This patient had symptoms for two and a half years. It is the most common of the gliomas—perhaps 35 to 40 per cent of gliomas are astrocytomas—and it is slow growing. Because it is slow growing, the brain adjusts to the extra pressure and there are no signs of intracranial pressure. These tumors infiltrate widely. They even may go from one lobe to another. A widely infiltrating lesion better explains the symptoms this patient had, so I'd like to think that it was an astrocytoma. Such a tumor is most commonly cerebral in location.

Astrocytomas may be either cystic or solid. Solid are most common in the adult. The solid type also infiltrates more widely. Because I need a widely infiltrating tumor to explain the symptoms in this case, I'm going to vote for a solid astrocytoma.

Where was the disease? Obviously, on the left side. Since he was righthanded, I'll put the lesion on the left side of the brain. The patient started with the history of paraesthesias. That would make me think of the possibility of a tumor in the parietal lobe. However, these were connected with a history of aphasia and jargon aphasia. Motor aphasia usually is localized in the frontal lobe anterior to the motor cortex in Broca's area. This patient gives the history of being able to hear people talk but not being able to answer. That sounds like motor aphasia. However, as the patient came out of these attacks, speech was irrelevant, which gives the possibility of jargon aphasia. In jargon aphasia, the lesion quite often is located near the superior temporal gyrus, in the temporal lobe, whereas the motor aphasias are from frontal lobe lesions. One can have jargon type aphasia with a lesion in the frontal lobe. I believe that's what this was. There's the motor aphasia and

then, as the patient is regaining the ability to talk, he seems to find words and sometimes substitutes the wrong words until the ability to talk comes back completely.

The outstanding thing about the history in this case, I think, are these focal convulsions. They are described as being a grimace and arm movements. They also would localize the tumor in the frontal lobe down near Broca's area, impinging by pressure or infiltration on the part of the motor cortex which controls the upper part of the body. The fact that he had absent abdominal reflexes, I think, indicates no specific lesion. The specific findings we have indicate a cerebral tumor.

The EEG one and a half years ago localizes the lesion to the right side of the brain. I don't know what the EEG on this last admission showed, but it has been said that the EEG is about useless as far as localization goes. Certainly, you can't throw out the clinical findings because the EEG does not agree with them.

Another thing that I think indicates there may be a frontal lobe tumor here is the fact that stimulation of the frontal lobe in animals produces increase of intestinal peristalsis. In ablation of the frontal lobes, it is said that peristalsis may become so great as to produce intussusception. This patient, after many years of the disease, did give a history of a week of abdominal upset not connected with food. My first guess on that would be a lesion in the frontal lobe causing the abdominal difficulty.

So my best diagnosis is an astrocytoma, localized in the frontal lobe near Broca's area.

The astrocytoma infiltrates widely and is removed by extirpation. It cannot be cured, as I understand it, but it can be helped a great deal by taking it out. I think at the exploratory craniotomy, an astrocytoma was found. It was removed. I think the patient died in one of three ways. He may have had an overwhelming infection, but I don't think so. However, he did have a spiking temperature, so we have to think of that.

He may have had an intracranial hemorrhage. I was hoping that it would be shown that the ventricular fluid was bloody. The intraventricular hemorrhage is described as causing death in about two to four days in a large percentage of cases. Accompanying death there is a hyperthermia, and the patient goes into profound shock and expires. The shock and hyperthermia can be explained as due to irritation of the fourth ventricle. He had those things. However, in the absence of bloody fluid, he probably died of cerebral edema following his operation, possibly due to increase of intracranial pressure producing a herniation down through the foramen magnum. I'm not pleased with that diagnosis, but it's the best I can do as to the cause of death.



## CLINICAL DISCUSSION

Dr. Delp: Dr. Stephenson, I would like to establish whether or not you think the electroencephalogram might have been reliable in this patient. In February, 1950, he had an EEG taken, and this report was made: "This is an abnormal EEG with diffuse disturbance of cerebral cortical rhythm. A greater area of dysfunction in the right temporal-parietal triangle strongly suggests possible organic brain disease." What do you think are the implications of that sort of report? How should it be interpreted?

Dr. Wayland Stephenson (Neurology): Judging by the protocol here, this EEG was taken soon after a series of seizures. Any time after a whole series of convulsions of any sort there may be diffuse slowing. Actually, at a time like that we could be very easily confused as to laterality. I think that if the EEG had been made following a period of repose, then we would find it might perhaps have been more localized.

Dr. Delp: You don't think this report indicates that a more extensive examination should have been made?

Dr. Stephenson: I do not think so. The electroencephalographers should not be saddled with that responsibility.

Dr. Delp: Dr. Steegmann, you've seen this patient's clinical examination report. Do you have any comments on the problem, especially covering the two-year period before hospitalization?

Dr. A. T. Steegmann (Neurology and Pathology): The patient was followed in the outpatient clinic. I see no report here of any spinal puncture, and there was a negative skull x-ray. There was a history of these spells beginning before the age of 20. I think that on a statistical basis one might assume that it was not an organic condition. With no family history of epilepsy, this patient probably should have had a pneumoencephalogram at a much earlier date. If a spinal puncture had been done in the outpatient clinic and reported as showing normal pressure and normal spinal fluid findings, with negative skull x-rays, and with EEG findings not inconsistent with the ordinary (idiopathic) type of epilepsy, I still think the diagnosis of brain tumor difficult.

Dr. Delp: You think there's nothing in the history or the signs reported that would not be consistent with epilepsy?

Dr. Steegmann: I think the absence of a family history should always suggest the possibility of a tumor of this type.

Dr. Delp: Dr. Williamson?

Dr. William P. Williamson (Neurosurgery): I think we have to say that these convulsions were focal. Focal seizures are due to a focal lesion of the brain until proved otherwise. We take that as one

criterion for our further detailed investigation of convulsive disorders. Another is the age. If the patient starts seizures over the age of 25, it's a brain tumor until proved otherwise. This patient was under 25.

I think these were focal seizures involving the motor speech because during attacks the patient, while unable to talk, still could understand. I think they were focal in their motor component of the motor strip because the arm was involved and the rest of the body was not. Probably the patient had a psychomotor element, which is a focal temporal lobe syndrome, because for five minutes following a seizure there was irrelevance in speech. That may not prove that it was focal because, after such a state, many people will just be confused. But this patient certainly had unusual seizures that pointed to the regions in the left side of the brain in the temporal and low inferior frontal areas.

Before investigation, we asked ourselves, "Is this tumor or is it one of the congenital vascular anomalies?" There is a nonneoplastic situation which produces focal seizures without neurologic deficit, and this patient did *not* have neurologic deficit. It was for that reason we did first an arteriogram to rule out the possibility of a vascular anomaly. An arteriovenous malformation diffused over the temporal parietal frontal lobe would provide a beautiful explanation fitting the entire situation.

On the basis of the arteriogram, showing high arterial elevation above the temporal lobe, we felt the patient had a tumor, mainly in the temporal lobe of the brain. Because of the size of the tumor and because of the absence of neurologic signs, we thought it might be one of two things which would *not* be fatal.

A meningioma can diffuse without producing much neurologic deficit, and meningioma of the sphenoidal ridge can produce this identical clinical picture. Sphenoid ridge meningioma was one favorable thing the patient could have had. Secondly, the large elevation and sort of curve in the x-ray makes you think it might be a big cyst. An astrocytoma can be cystic, and a cystic astrocytoma can be favorably attacked.

Those were the two favorable lesions that he could have had. The unfavorable lesion was any type of infiltrating glioma in this location—unfavorable because this is the dominant hemisphere, near the motor, speech, auditory, sensory and other important areas. So we felt, after arteriograms, confirmed by ventriculogram, that the patient had a lesion in this region which we hoped was cystic astrocytoma or meningioma. If it was not, then we had fundamentally a problem as to whether it was glioblastoma, astrocytoma, or oligodendroglioma. One cannot excise the motor-sensory area and have anything worthwhile left.

We sometimes like to do biopsies before craniotomy, and, in cases that prove inoperable, we spare the patient a craniotomy. The location involved here is one in which needle biopsy is *not* feasible because one has to start blindly needling through important tissues in the speech area. We don't like to needle several times, missing the tumor, finally hitting an operable tumor but having rendered the patient aphasic by this blind needling. So this is one case where we felt it was all or nothing—to turn a flap and hope to find an astrocytoma that was cystic, or a meningioma. If it was glioma, fundamentally the thing would be inoperable. So it proved.

At surgery, we found *no* sphenoid ridge meningioma, we found *no* cyst. There was a large, solid, infiltrating astrocytoma (which the student correctly deduced) through the central lobe. The pathologist will tell you of its extension. But, fundamentally, it was an infiltrating glioma in the dominant hemisphere. It's amazing that the patient didn't have neurologic signs. He should have been aphasic, hemiplegic and hemianoptic, but he wasn't.

When the neurosurgeon faces an inoperable tumor, we just have to say we're stuck. The best we could do here was *not* a total removal, rendering the patient amnesic and aphasic. We don't purposely do

that. We thus were limited to what solid brain we could remove in the left temporal lobe. We know from the work that's done for vasomotor epilepsy and frontal lobectomies that one can remove about five centimeters from the tip of either temporal lobe without creating neurologic deficit. It is below the motor speech area, anterior to the visual pathway, and so we took just that much of the brain and amputated the left temporal horn. There, I think, is the reason for the patient's death. Had we grossly removed the entire temporal lobe and tumor, the surgery would not have been fatal; as it was, an inadequate internal decompression left the area filled with a large brain tumor.

We did *not* create neurologic deficit with our surgery because it was done under local anesthesia. Purposely, it was done under local anesthesia so we could have the patient talking and moving the right side as we worked, to be sure we weren't taking too much. At the end of surgery the patient responded nicely, had *no* hemiplegia, *no* aphasia, *no* hemianopsia—came out of it in fine shape.

But then came that serious train of events that follows intracranial surgery if you have failed to remove the tumor. It was then that he got into dire straits from a situation which, I think, was the inevitable cause of his death.

Dr. Leland D. Stoddard (Pathology): Dr. Williamson, can you tell us a little about the hemorrhage into the area of the tumor that we are going to see in the gross. Do you think that it came on after the operation, during it, or immediately afterward?

Dr. Williamson: There was *no* dire trouble with the tumor at the time of surgery. We were faced, of course, with the postoperative decision when the patient became critical: Was there postoperative hemorrhage? In such a case we could raise the flap and evacuate it. The pathologist will always find, when surgery is unsuccessful after craniotomy, some blood in the tumor bed. These patients don't die unless a great big clot compresses vital areas.

#### PATHOLOGY REPORT

Dr. J. David Robertson (Pathology and Oncology): A large, diffusely infiltrating tumor occupied the left frontal, parietal, and temporal lobes, as you will see in these coronal sections of the brain.

The first section showing tumor was taken about four centimeters from the frontal poles. In most areas the tumor was white, firm, and solid; but in one area there were numerous small cysts. A section farther posterior revealed the surgical removal of the temporal pole and postoperative hemorrhage within the tumor occupying the parietal lobe. The tumor involved the lenticular nuclei but did not extend into the internal capsule, which lies deep to these structures. You can easily see that the expand-

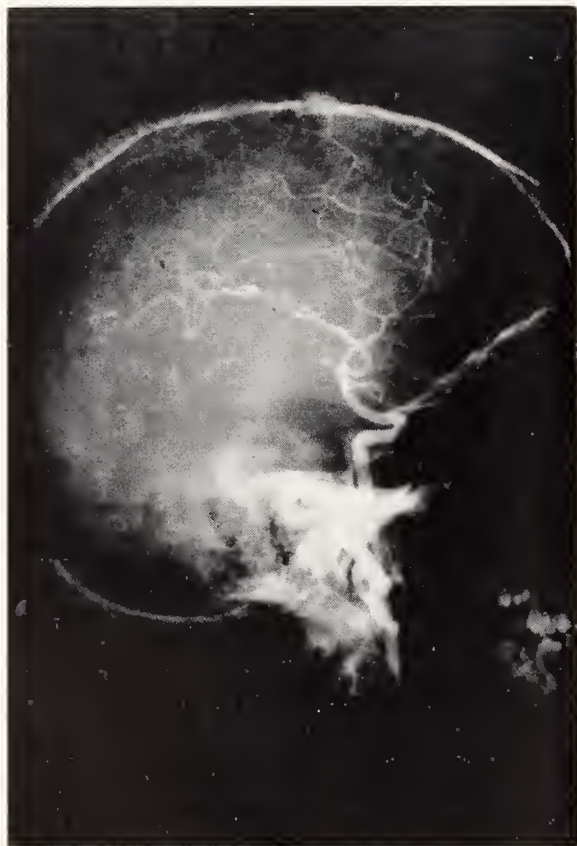


Figure 1. Arteriogram, showing displacement of vessels farther from base than is normal.



ing mass of the tumor had pushed the midline to the right.

Along the medial aspect of the occipital lobes there were areas of fresh hemorrhagic necrosis that followed the convolitional contours. Likewise, in the pons, principally on the right side, there were multiple hemorrhages.

Dr. Stoddard: As you have seen, this large tumor produced changes in several different ways. One way was by actually infiltrating important areas. Another way was by compressing contiguous areas of the brain. For example, the motor area was compressed as much as it was infiltrated. Still another way that the tumor produced changes was simply by increasing the mass of the brain. Therefore, the left side was pushed to the right. Not only that, but the mass pushed downward, and the hippocampal gyrus was pressed against the tentorium. In turn, the tentorium was pressed upon the posterior cerebral arteries, which serve the occipital poles and also the pons. Hence, there were foci of necrosis and hemorrhage bilaterally in the distribution of the posterior cerebral arteries.

Histologically, the tumor was an astrocytoma.

The tumor greatly expanded this gyrus as it infiltrated it and compressed the adjacent gyrus. That is rather characteristic of astrocytomas.

Next, I want to show you how an astrocytoma involves more and more of the brain. This type of glioma is almost never well demarcated from surrounding brain. Here you see a more or less nebulous transitional area in which some neurones remained amidst the proliferating astrocytes.

We are talking now about the solid astrocytoma,

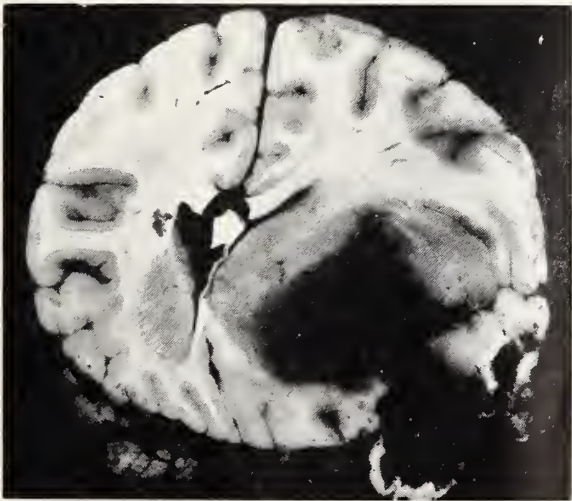


Figure 2. Coronal section of the brain viewed from front to back. The poorly defined tumor mass occupies the left basal nuclei, internal capsule, and cortex of the temporal and parietal lobes; compresses the left lateral ventricle; and shifts the midline to the opposite side. Post-operative hemorrhage within main tumor mass and adjoining temporal lobe. Infiltrating tumor enlarges lower convolutions and obscures pattern of gray and white matter.

the common type of astrocytoma arising in the cerebral hemispheres of adults. Although you have already seen some small cystic spaces in this tumor, it was not at all like the cystic cerebellar astrocytoma, which has one very large cyst and a tumor nodule in its wall.

I want to mention again the distant effects of this tumor—the results of compression of the posterior cerebral arteries. Here a pontine branch is seen in this histological section. The first result of vascular injury probably was edema. Then, with further injury, there was hemorrhage, necrosis of parenchyma, and a consequent polymorphonuclear leukocytic exudate infiltrating the walls of the vessel.

What happened to the patient terminally? There was postoperative hemorrhage in the tumor. The brain also was somewhat swollen. Both contributed to increasing intracranial pressure. Then, the patient had been complaining of pain in the abdomen. Perhaps the pain was related to gastromalacia, which may occur in cases of cerebral lesions of various sorts. There were hemorrhages in the stomach, and perhaps these lesions were developing during the last week. The fever was no doubt the consequence of terminal bronchopneumonia.

There were a few incidental findings. The calcifications mentioned by Dr. Tice were stones in the upper pole of the right kidney. Other lesions are listed in the diagnosis.

#### ANATOMICAL DIAGNOSIS

##### Primary:

Astrocytoma of the left frontal, parietal and temporal lobes causing shift of the brain to the right and bilateral tentorial compression of the posterior cerebral arteries.

Bilateral focal necroses and hemorrhages in occipital lobes and in pons.

Operative wound, left temporal region. (History of craniotomy and partial removal of left temporal lobe three days before death.)

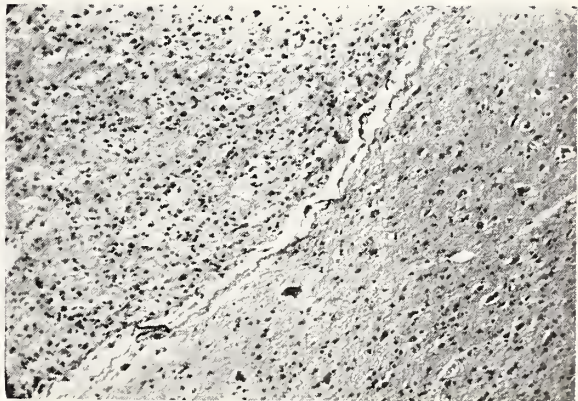


Figure 3. Photomicrograph of astrocytoma involving convolution to the left and above. The sulcus separates this convolution from adjoining convolution uninvolved by the tumor.

Trephine wounds, occipital lobes, bilateral. (History of ventriculogram three days before death.)  
 Drainage wound, right occipital area.  
 Gastromalacia and focal gastric and duodenal hemorrhages.  
 Terminal bronchopneumonia, bilateral.  
 Acute splenic tumor.  
 Paracentral hepatic necrosis.

#### Accessory:

Cystitis, minimal.  
 Chronic pyelonephritis and nephrolithiasis, upper pole, right kidney.  
 Arteriosclerosis, aorta, slight.  
 Fibrous pleural adhesions, left lower lobe.

#### SUMMARY

The patient with convulsive seizures always presents a problem of challenge and great responsibility to the physician. The responsibility is that of making an accurate and complete diagnosis; otherwise therapy may long be misdirected. This is well illustrated in the case here discussed.

#### LICENSES TO 49 PHYSICIANS

A list of 49 physicians, newly licensed to practice medicine in Kansas, was released recently by the Kansas State Board of Medical Registration and Examination. Included were 41 who were licensed by endorsement and eight who successfully passed examinations given December 10 and 11, 1952.

The names and addresses of those licensed by endorsement are as follows: Walter Eugene Blevins, Hugoton; Bernard Stephen Brody, Topeka; David James Buddrus, Mission; LeGrand B. Byington, Kansas City, Missouri; Clair Joseph Cavanaugh, Great Bend; Edwin Harold Church, Topeka; Kendall Allen Clark, Atlanta, Georgia; James Atwood Dugger, Topeka; Ronald Joseph Garst, Satanta; Joseph Gendel, Topeka; Thomas Warne Graham, Leavenworth; George Henry Hanlon, Gouverneur, New York; Jack Edward Hilgers, Plainville; James Cotter Hirschberg, Topeka; Clifford William Hogan, Jamestown, North Dakota; Gilbert Frederick Jordan, Wichita.

Betsy Anne Ledbetter, Manhattan; Edward Sharpe Lee, Jr., Portsmouth, Virginia; Joseph Gibson Lockhart, Philadelphia; Francis Nick Lohrenz, Kansas City; Harold Ray Lyddon, Jr., Kansas City, Missouri; Alice Marsh, Kansas City; Dean McCandless, St. John; Duncan Alex McLauchlan, Wichita; Lunetta Anna Memming, Lawrence; Donald Charles Niederluecke, Valley Falls; Richard Lee Owens, Kansas City, Missouri; Irving Philips, Topeka; John Robert Rufe, Kansas City, Missouri.

Betty Sue C. Schurter, Hardtner; Lonis Leon Schurter, Hardtner; John Darrell Smith, Hugoton; Henry Bernard Stryker, Concordia; Julius Austen

Tabris, Kansas City, Missouri; James Alvin Taylor, Parsons; Jane Wasson Tillinghast, Kansas City; Girard Veenschoten, Jetmore; Thomas Aloysius Welton, Perry; Daniel Coyle Wilkerson, Leavenworth; Lawrence Edward Woodard, Wichita, and Ruth Ethel Wright, Sedan.

Those who were licensed by examination were Henry Joseph Biermann, Wichita; Chauncey Goodrich Bly, Kansas City; Murray Morris Cash, Tulsa; William LeRoy Doane, Kansas City, Missouri; Harry Tsuneo Hidaka, Wichita; Gilbert Francis Norwood, Kansas City; George Gayle Stephens, Wichita, and Willard Fisher Werner, Denver.

#### NOMINATIONS FOR 1953

Officers of the Kansas Medical Society for the year beginning on May 7, 1953, will be elected by the House of Delegates at its meeting on that day. Ballots will show the names of those listed below, as selected by the Nominating Committee at its meeting on January 20, and additional nominations may be made from the floor. Those now holding offices are indicated by asterisks.

President-elect .....	*Murray C. Eddy, M.D., Hays
First Vice President ..	*Thomas P. Butcher, M.D., Emporia
	*John M. Porter, M.D., Concordia
Second Vice President ..	Karl E. Voldeng, M.D., Wellington
	Clyde W. Miller, M.D., Wichita
Constitutional Secretary	*Frederick E. Wrightman, M.D., Sabetha
	*Dale D. Vermillion, M.D., Goodland
Treasurer .....	Albert C. Armitage, M.D., Hutchinson
	*John L. Lattimore, M.D., Topeka
AMA Delegate .....	Dwight Lawson, M.D., Topeka
	George F. Gsell, M.D., Wichita
AMA Alternate .....	Cyril V. Black, M.D., Pratt
	*Peter E. Hiebert, M.D., Kansas City
	Lee H. Leger, M.D., Kansas City

#### FEWER APPLICANTS FOR MEDICAL SCHOOLS

Continuing a three-year trend, the number of students applying for admission to the nation's medical schools declined again this year, according to the official study of 1952-1953 applicants by the Association of American Medical Colleges.

Some 3,150 fewer persons applied this year than in the 1951-1952 year, and some 7,600 less than three years ago. This means that competition among the medical schools for high-ranking students is increasing. Of 16,763 persons who made application last fall, 7,778 were accepted.

The survey shows that the average pre-medical student applies to three or four medical schools, so that no school can expect to have every student it selects.

A physician who mentions a company's advertisement in the Journal to that company's representative shows his appreciation for the support given this publication.



## ACTIVITIES OF MEMBERS

Dr. William J. Reals has returned from duty with the armed forces and is now pathologist at St. Joseph Hospital, Wichita.

Dr. Mary T. D. Glassen, Phillipsburg, has announced that Dr. Barbara Calderwood, who will complete her internship at Menorah Hospital, Kansas City, in June, will then be associated with her in practice at the Phillipsburg Health Center. Dr. Calderwood took her preceptorship under Dr. Glassen while attending the University of Kansas School of Medicine.

Dr. Ernest D. Erickson, who joined the staff of the Arkansas City Medical and Surgical Clinic last July, has been called to active duty with the Army. He is reporting to San Antonio this month for two months at a medical field service school prior to reassignment.

Dr. O'Ruth Petterson, Wichita, discussed "Infectious Diseases of Childhood" before the Alcott School Parent-Teachers Association recently.

Dr. Homer B. Russell, Great Bend, has gone to Chicago for a year's postgraduate work at St. Luke's Hospital. Before leaving he resigned appointments as city and Barton County health officer.

Dr. Rowe F. Bisbee, formerly obstetrician and gynecologist at the Sugg Clinic, Ada, Oklahoma, has opened an office in Salina. He is a graduate of Washington University School of Medicine, St. Louis, and has had two years' service with the medical corps of the Army in the South Pacific and the Far East.

Dr. E. R. Beiderwell, Garden City, opened an office in Leoti in February at the time of the opening of the new public hospital there.

Dr. John C. Artman, who has been associated in practice with Dr. William Brewer and Dr. Lloyd W. Reynolds in Hays during the past two and one-half years, has been recalled to active service in the Navy. He plans to return to Hays on completion of his tour of duty.

Dr. Robert L. McAllister, Marysville, was recently named health officer for Marshall County, succeeding the late Dr. O. P. Wood.

Dr. Herbert L. Bunker, Jr., who recently returned from military service to his home in Junction City, is now associated in practice there with Dr. F. W. O'Donnell, Dr. A. E. O'Donnell and Dr. Harry O'Donnell.

Dr. Donald Niederluecke, who was graduated from the University of Nebraska School of Medicine in 1951, has opened an office for practice in Valley Falls.

Dr. Fred A. Garvin, who has practiced in Augusta for more than 50 years, was guest of honor at a community celebration on February 4, with the Augusta Chamber of Commerce as host. Dr. Edward H. Hashinger, of the University of Kansas School of Medicine, was guest speaker on the program following a dinner.

Dr. Karl Menninger, director of education for the Menninger Foundation, Topeka, received the annual citation of the Topeka Chapter of the National Conference of Christians and Jews at a dinner held on February 19. He was recognized as "a Topekan who has contributed notably to the cause of world brotherhood."

Dr. Thomas Aloysius Weldon has opened an office in Perry. He was graduated from the Stritch School of Medicine of Loyola University, Chicago, in 1950.

Dr. Howard E. Snyder, Winfield, will preside at a symposium on cancer to be held in connection with a sectional meeting of the American College of Surgeons in Oklahoma City, March 24 and 25.

Dr. William S. Swart and Dr. Lindley E. Strode, Girard, were presented 50-year membership pins at a recent meeting of the Girard Blue Lodge.

### MOTION PICTURE REVIEWS AVAILABLE

The fourth supplement to the booklet entitled "Reviews of Medical Motion Pictures" was published recently by the Committee on Medical Motion Pictures of the A.M.A. Copies may be requested from the committee, American Medical Association, 535 North Dearborn Street, Chicago 10, Illinois.

## COUNTY SOCIETIES

Dr. Orval L. Smith, St. Marys, was elected president of the Pottawatomie County Medical Society at a meeting held last month. Dr. Edward Goldsich, St. Marys, was named secretary.

A recent meeting of the Miami County Society, held at the state hospital at Osawatomie, was attended by physicians from Miami, Anderson, Franklin and Johnson counties. Dr. Charles C. Dennie, Kansas City, was guest speaker. His subject was "Unusual Reactions to Antibiotics."

Dr. J. Howard Gilbert, Seneca, was elected president of the Nemaha County Society at a meeting held in Sabetha recently. Dr. Thomas A. Montgomery, Sabetha, was elected vice president, and Dr. Martin J. Rucker, Sabetha, secretary.

As part of the observance of the Sedgwick County Medical Society's 50th anniversary, the group is sponsoring a series of three medical meetings open to the public. The first, held on February 12, featured a talk on heart disease by Dr. R. W. Wilkins of Boston. Speaker for the second meeting, on March 3, will be Dr. Melvin Casberg, chairman of the Armed Forces Policy Committee for the National Blood Program. The final meeting, on April 1, will introduce Dr. C. P. Rhoads, New York, who will speak on advancements in treatment of cancer.

Mr. Roy Johnson, director of the Hospital Facilities Division, Kansas State Board of Health, was guest speaker at the January meeting of the Montgomery County Society. He discussed hospital construction in Kansas, mentioning that 70 new hospitals have been put into operation in the last six years.

The February meeting of the Shawnee County Society was held at the group's new building, 315 West Fourth Street, Topeka, on February 2. Dr. Alfred R. Sugg, Ada, Oklahoma, spoke on "Prostatism." The following physicians were elected to membership: Dr. J. Cotter Hirschberg and Dr. Prescott W. Thompson, Menninger Foundation; Dr. Joseph Gendel, orthopedist, Topeka Medical Center; Dr. G. Bernard Joyce, orthopedist practicing in partnership with Dr. Clyde B. Trees. Two physicians were elected to emeritus membership, Dr. G. L. Kerley and Dr. J. F. Northrup.

A joint meeting of members of the Sedgwick

County Society and pharmacists of Wichita was held at the Allis Hotel, Wichita, on February 3. Mr. Sam Alfind, chief of the Kansas City Division of the Pure Food and Drug Administration, was guest speaker.

Members of the Allen County Medical Society were guests of the Allen County Medical Assistants' Society at a dinner meeting in Iola on February 10. Dr. Warren F. Bernstorff, Winfield, president of the Kansas Medical Society, was guest speaker.

Advertisers appreciate the patronage of Journal readers. All products advertised carry the seal of acceptance of the various councils of the A.M.A.

## DEATH NOTICES

EDGAR C. DUNCAN, M.D.

Dr. E. C. Duncan, 77, who served as president of the Kansas Medical Society in 1931, died at his home in Fredonia on February 12. He had practiced there since his graduation from Beaumont Medical College and Hospital, St. Louis, in 1901.

Soon after war was declared in April, 1917, Dr. Duncan organized a Red Cross ambulance company for service in France, and the unit was later taken into the Army with Dr. Duncan as commanding officer. The company served overseas for a year, after which Dr. Duncan remained active in the reserve and became colonel commanding the medical regiment of the 89th division reserve.

He was active in his local medical society, having been an officer for many years, and was interested in civic affairs also. He had served as mayor of Fredonia and as president of the city's chamber of commerce.

ALFRED E. GARDNER, M.D.

Dr. A. E. Gardner, 83, who practiced medicine in Wichita 40 years before his retirement in 1948, died on February 9 in a Wichita hospital. He was an honorary member of the Sedgwick County Medical Society.

Dr. Gardner was graduated from the University of Louisville School of Medicine in 1895, and practiced for 10 years in Kentucky in Morgantown and Louisville. He then moved to Kansas and remained here except for a period during World War I when he served as a major in the medical corps. He was a fellow of the American College of Surgeons.



## BLUE SHIELD

### PROFESSIONAL RELATIONS

At a recent conference in Chicago attended by representatives from the Departments of Professional Relations of Blue Cross-Blue Shield Plans from all over the United States, and some from Canada, it was most interesting to note the difference in concepts, attitudes, and techniques. These three subjects were suggested as a theme for workshop discussion during the conference, and were explored thoroughly.

In one group the concept finally approved was that Blue Cross and Blue Shield are non-profit community instruments of hospitals and physicians for making their services available to the American people through voluntary prepayment. This concept was agreed upon after much discussion. Many plans seem to be afraid to use certain terms because of the wrong connotation which might be given them. It was evident that the plans serving large industrial areas have an entirely different approach to a problem which is also different in many aspects. The highly industrialized areas must compete on a different level and must always bear in mind the kind of groups they are serving.

Attitudes toward the plans and toward the physician and hospital relationships seem to be governed also by geographical differences. The almost complete co-operation which now exists between physicians, hospitals, and the plans in the so-called rural states seems to be a desirable result which has not been achieved in many other areas. In some places where there is a division between the two plans, hospital calls are never made by anyone representing the Department of Physician Relations and vice versa. This seems a most unhappy situation, and it is hoped such differences of opinion will never become important in the relationships between physicians, hospitals, and the plans.

In describing the techniques used in the Kansas plan, the development of State Member Councils was unique among all other plans. The Kansas delegation told the group how it is being developed in Kansas and with what success in cementing existing relationships between members and the plan and forming new relationships. This seems to be a new idea in Blue Cross-Blue Shield relations, and Kansas is apparently leading in its development.

It has been deemed such an important program in Kansas that a new director has been brought into the office to set up member councils at three different levels, first in the community, second in the district, and third state-wide. These will be groups of interested members of Blue Cross and Blue Shield who

are eager to assist the hospitals and the doctors in administering a program which will benefit all and which can be maintained at the lowest cost possible. George Beverly, one of the representatives who has been working in the Garden City area, has been selected to direct this program.

A very homely comparison was used which bears repeating. The whole program was likened to a three-legged milk stool, one leg of which would be physicians, another leg hospitals, the third leg the Blue Cross-Blue Shield plans. Complete coordination between the three legs must necessarily be maintained. In finer words, a triad has been formed which should result in the lowest possible cost for the highest possible standard of physician and hospital care.

### ACTIVITIES OF RADIOLOGICAL SOCIETY

A joint meeting of the Kansas Radiological Society and the Radiological Society of Greater Kansas City was held at the University of Kansas Medical Center, Kansas City, February 16, 17, and 18. In cooperation with these organizations, the Kansas Medical Society, the Kansas State Board of Health, and the University of Kansas School of Medicine presented a postgraduate course in radiology.

Dr. Anthony Rossitto, Wichita, was elected president of the Kansas Radiological Society at a dinner session held at the Terrace Club the evening of the 16th. Dr. A. M. Cherner, Hays, was named vice president, and Dr. Willis L. Beller, Topeka, was chosen as secretary-treasurer. It was announced that the society had been awarded a certificate of merit for its exhibits at the Kansas City Southwest Clinical Society meeting in 1952. The society voted to donate \$50 in prizes for a contest to be sponsored by the Kansas Society of X-ray Technicians in Kansas City in March, 1953.

The following Kansas radiologists presented papers at the postgraduate course: Dr. Lewis G. Allen, Kansas City; Dr. Beller; Dr. Allan K. Briney, Topeka; Dr. Cherner; Dr. Leland F. Glaser, Hutchinson; Dr. Homer L. Hiebert, Topeka; Dr. Ralph P. Hines, Wichita; Dr. John R. Kline, Wichita; Dr. Doris A. Kubin, Kansas City; Dr. Hans Lewin, Topeka; Dr. Warren S. Peiper, Arkansas City; Dr. Rossitto; Dr. James R. Stark, Wichita; Dr. Galen M. Tice, Kansas City, and Dr. Charles M. White, Wichita.

Prominent guest speakers included Dr. Simeon T. Cantril, Seattle; Dr. Isadore Lamp, Ann Arbor; Dr. Isadore Meschan, Little Rock; Dr. Edward B. D. Neuhauser, Boston, and Dr. David G. Pugh, Mayo Clinic, Rochester.

A meeting of the Kansas Radiological Society will be held in Wichita in early May, at the time of the annual session of the Kansas Medical Society.

# Present Status of the Hormonal Therapy of Cancer of the Breast and Prostate\*

Bernard Brock, Senior Student  
University of Kansas School of Medicine

## INTRODUCTION

The relationship of the steroid hormones of the body to the growth or to the inhibition of growth of certain neoplasms has been known for many years. Hormonal therapy has proved effective for at least five types of neoplastic disease. There are malignant lesions of the: (1) breast (both male and female), (2) prostate gland, (3) uterus, (4) lymphatics system and (5) hematopoietic system.

Through intense research in the past 12 years, hormones have come out of the experimental laboratory and are now being used routinely by the clinician as one of the few effective tools in the campaign against malignancy. However, experience by experts in this field has shown conclusively that while steroid hormones are effective in some cases, there still may often follow complete failure or, more important still, undesirable side reactions. In other instances, malignancy in another part of the body may be initiated.

Thus, it should be stated clearly at the beginning that indiscriminate therapy of cancer with steroid hormones by one improperly trained or uninformed, may cause more harm than good. The general practitioner should have knowledge of what type of hormonal therapy can be used for patients with malignancy. It is the purpose of this paper to present as far as possible the most up-to-date management of neoplasms by the use of steroid hormone therapy and related surgical procedures. While no attempt has been made to review every article written on the subject, an attempt is made at reviewing some of the more important ones.

## MALIGNANT LESIONS OF THE FEMALE BREAST

The exact role of estrogens as etiologic agents in female breast carcinoma is still obscure. Nathanson<sup>1</sup> concludes that "excretion studies of the hormones with the present methods have failed to yield much information." He further states, "there is no significant deviation in the excretion of sex hormones in women with breast cancer; there is no proof that sex hormones are not involved in the disease or that abnormal secretion of the hormones does not accompany

or precede the development of breast cancer. It is significant that normal excretion rates may be found in the presence of breast cancer; and cancer of the breast may be independent of hormonal influence once it develops. Definite proof for the hormones as the direct cause of cancer is lacking."

It is an interesting finding, also by Nathanson,<sup>1</sup> that there is a higher incidence of carcinoma of the breast in women who have not borne children than in those women who have. Twombly<sup>2</sup> has introduced the interesting theory that regression of breast cancer may occur with a change in the hormone balance within the patient's body.

*Use of Estrogens:* Haddow<sup>3, 4</sup> in England and later Nathanson<sup>1</sup> in the United States showed that estrogens could be helpful in mammary carcinoma, and they have reported satisfactory regression of metastatic lesions. In other cases they have been able to demonstrate spectacular healing of the primary tumor. Nathanson<sup>1</sup> in his early reports stated that "favorable results occur in women past the menopause, whereas estrogens in younger women with breast cancer seem apt to stimulate rather than depress the growth rate." As pointed out by McCullagh,<sup>5</sup> this would seem paradoxical in light of the fact that "the rate of growth of malignant breast tissue should be decelerated by substances which at one time accelerated the development of the same tissue." However, such facts are now firmly established.<sup>6</sup>

The most valuable single factor in estrogen therapy is impressive symptomatic relief of pain. Adair<sup>7</sup> has reported that his patients were symptomatically improved in spite of the fact that the disease was progressive. He also has shown that distant metastases respond favorably with estrogen therapy in the skin, lymph nodes, pleurae, and in some instances in the primary tumor itself. He was unable to obtain symptomatic relief from pain in osseous metastases; however, Garland, Baker, Picard and Sisson<sup>8</sup> have reported that from 40 to 70 per cent of patients with osseous metastases from breast cancer are relieved of pain by steroid hormone therapy. They state that the average survival time of patients treated with steroid hormones is 8.8 months. Cutler, Schlemenson, Kearney, and Caceres<sup>9</sup> observed that "palliation occurred most frequently in patients over 60 years.

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.



The effects were noted in both bone and soft tissue metastases." It is their opinion that "certain patients with advanced carcinoma of the breast experience relief from pain and a sense of well-being during estrogen therapy, even in the absence of objective improvement."

Suffice it to say that estrogens are of value in the palliative treatment of mammary carcinoma, but should not replace surgery as the primary treatment. They have a valuable supportive role in relieving pain, improving health, and prolonging life in some patients.

*Drugs and Dosage:* The drugs utilized in the treatment of breast carcinoma are as follows: diethylstilbestrol, 15 mg. daily; ethinyl estradiol, 3 mg. daily; Premarin, 30 mg. daily; estradiol dipropionate, 5 mg. twice weekly (IM); dienestrol, 15 mg. daily; dimethyl ether of diethylstilbestrol, 30 mg. daily; and tri-para-anisyl-chloroethylene (TACE), 24 mg. daily.

Diethylstilbestrol is probably the hormone of choice and the one most widely used today. The hormone is used by some for three to six months, duration varying with the age of the patient and the occurrence of various side effects.

*Untoward Side Effects:* Some of the more striking side effects are nausea, vomiting, tender breasts and nipples, especially in younger women, increase in pigmentation, incontinence of urinary bladder, and vaginal bleeding. However, the chief danger in estrogen therapy is to be found in an acceleration of malignant growth in younger women. For this reason, the 1950 report of the American Medical Association Council on Pharmacy and Chemistry<sup>10</sup> (see below), advises that "any patient who still menstruates or who has menstruated within five years should definitely not receive estrogen therapy as it accelerates the rate of growth of the carcinoma. In no case should estrogen therapy replace radical surgery in treatment of breast carcinoma."

*Castration:* The subject of castration is too lengthy to be dealt with fully here. However, it should be remembered as an indirect method of "hormone" therapy. Two methods should be considered: (1) prophylactic and (2) therapeutic castration. The purpose of both is to reduce internal secretion of estrogens. The rationale of these methods is based upon the findings of such workers as Harrell,<sup>11</sup> who showed conclusively that malignancy of the breast was ten times greater in normal women than in castrated females, and that castration early in life was an important factor. Two methods have been used in castration. One is surgery and the other is x-radiation. Because of the uncertainty of the latter method in obtaining complete castration, Nathanson and Kelley<sup>12</sup> are of the opinion that "there has been a trend toward ovariectomy in young women when their condition

permits it, reserving radiation for women over 40, when ovarian action is beginning to wane."

*Use of Androgens:* The rationale of the use of androgens in mammary carcinoma is their action to inhibit or neutralize the effect of estrogens within the body. Androgens like estrogens have proved to be only palliative, not curative, in mammary cancer. It has been the opinion of McCullagh<sup>5</sup> that androgens are more effective than estrogens and have their greatest value in advanced cases of breast malignancy with metastases to the bone and lung. "Unfortunately," he states, "in some patients the entire disease appears to take on increased vigor during therapy." The latter was essentially the finding of Farrow and Woodard<sup>13</sup> who, in 1940, first began treating mammary carcinoma with injections of testosterone propionate. They concluded at that time that "testosterone in large doses exerts a stimulating rather than an inhibiting effect on growth of metastatic mammary carcinoma."

In 1946, Adair and Hermann<sup>14</sup> found that large doses of testosterone (50 to 200 mg. two to three times per week) gave striking improvement in four of eleven patients treated and in three bone metastases recalcified; also, in one patient it was felt that there was temporary regression of an extensive primary tumor.

Twombly<sup>2</sup> reported that "twenty-eight per cent of bone metastases from carcinoma of the breast will respond to testosterone therapy, at least temporarily." The reports of Farrow and Woodard<sup>13</sup> and those of Huggins<sup>15</sup> have stressed the caution that must be used with testosterone therapy, because of the danger of stimulation rather than inhibition of malignant growth. Huggins<sup>15</sup> also believes that testosterone is "most beneficial in giving temporary relief in patients with osseous metastases." However, he also calls attention to the fact that certain undesirable side effects may offset any good results.

It has been an interesting speculation that testosterone therapy might be used with castration following mastectomy in an attempt to limit the growth of distant metastases. However, results have been discouraging and, as Snapper<sup>16</sup> has pointed out, "Castration and testosterone treatment does not offer an effective protection against the formation of metastases in patients who have been operated on for carcinoma of the breast with axillary involvement." With this combined method it was hoped that it might be of value in (1) causing regression of metastases following mastectomy and (2) as a precaution against recurrence following mastectomy without metastases. However, results are poor and in many cases recurrence has occurred in spite of any choice of therapy.

In 1941, Lowser<sup>17</sup> found favorable changes in patients with advanced mammary carcinoma by the use

of testosterone propionate. Farrow and Woodard,<sup>13</sup> on the other hand, found that the use of small doses of testosterone in some cases caused accelerated growth of osseous metastases. They further reported that "testosterone is contraindicated in patients with hypercalcemia associated with osseous metastases." They warned that "routine blood chemical studies in patients receiving testosterone therapy is obvious." They cite one case in which "the androgen at first appeared to activate the lesions and later to inactivate them." They concluded, "it would appear that in many instances a favorable status may be maintained until pulmonary or liver metastasis appears." They further state that "when this occurs the patient rapidly retrogresses and dies within a relatively short time despite the continued administration of the androgen." These findings were again supported by Adair in 1949.<sup>18</sup> Preston, Taylor, and Crumrine<sup>19</sup> have reported satisfactory regression of bony metastases with decalcification of osteoplastic metastases and recalcification of osteolytic metastases.

*Drugs and Dosages:* Testosterone propionate is by far the most commonly used androgen. However, Nathanson and Kelley<sup>12</sup> state that crystalline suspensions of testosterone, methyl testosterone, and testosterone cyclopentyl propionate "appear to be as effective as testosterone propionate when given in comparable dosages."

The usual dosages used range from 150 to 300 mg. weekly in at least three divided doses; however, larger doses (100 to 200 mg. daily) have been recommended. Huggins<sup>15</sup> suggests that testosterone propionate should be given in 25 mg. doses intramuscularly daily. Nathanson<sup>20</sup> suggests 50 to 100 mg. intramuscularly three times weekly. Garland, Baker, Picard, and Sisson<sup>8</sup> are of the opinion that "there is no consistent difference in the favorable results between low dosage rate (e.g., 75 mg. per week) and high dosage rates (600 mg. per week) when treatment is continued for at least two months."

*Undesirable Side Effects:* Huggins<sup>15</sup> has stated that the most common and significant side effects in the female are masculinization, hypercalcemia, and heart failure. Adair and Hermann<sup>14</sup> have pointed out that "it would appear that testosterone is contraindicated in patients with hypercalcemia associated with osseous metastases. The importance of routine blood chemical studies in patients receiving testosterone therapy is obvious." Adair<sup>7</sup> reports in his experience "the more noticeable side effects after the administration of androgens were increase in weight, edema of the lower extremities, deepened voice, hirsutism, and acne."

*Remarks:* For a more adequate summary of the present trend of thought regarding the subjects considered above, the recommendations of the Subcom-

mittee on Steroids and Cancer, Committee on Research of the American Medical Association, Council on Pharmacy and Chemistry, in their 1951 report, have best presented the conclusions to be drawn from research and clinical experience up until the present date. They are as follows:<sup>10</sup>

1. The best curative measure for mammary carcinoma available at present is early diagnosis and radical surgical removal of the tumor and surrounding tissue.

2. Three palliative measures are available to deal with metastatic mammary cancer: surgery for localized lesions, irradiation and hormone therapy. For most osseous or soft tissue lesions, irradiation is the treatment of choice; lung lesions and very widespread osseous or soft tissue metastases may best be treated with hormone therapy.

3. The response of lesions to testosterone propionate does not appear to depend particularly on the physiologic age of the patient, whereas, estrogen therapy is ineffective and dangerous in premenopausal patients or patients at the menopause. The effectiveness of estrogen therapy of soft tissue and lung metastases appears to increase with the age of the patient.

4. Testosterone propionate is the hormone of choice for treatment of premenopausal women regardless of site of lesions. However, it should be remembered that castration is usually more effective in the premenopausal woman, and this should be the treatment of choice if there are no contraindications. In women five years or more postmenopausal, estrogens are the hormones of choice for treatment of soft tissue and lung metastases. Although osseous lesions of postmenopausal women respond equally to testosterone propionate or to estrogens, the superiority of testosterone in controlling subjective symptoms, particularly pain, makes it appear to be the drug of choice for these metastases.

5. The location of bone metastases does not influence the response. Skin and lymph node lesions respond more frequently than do other soft tissue lesions. Abdominal metastases are reported to respond least often.

6. An effective dosage schedule of testosterone propionate appears to be 50 mg. given three times weekly. The minimum total dose is about 3 Gm., and the minimum length of therapy should be three months before concluding that a patient will not respond.

7. The minimum total dose of diethylstilbestrol, dienestrol, Premarin, and the dimethyl ether of diethylstilbestrol appears to be about 4 Gm. and the minimum duration of therapy about three to six months. For ethinyl estradiol and estradiol dipropionate, the minimum total dose appears to be 200 mg. and the minimum duration of therapy three to six months.

8. For the present, it is suggested that treatment

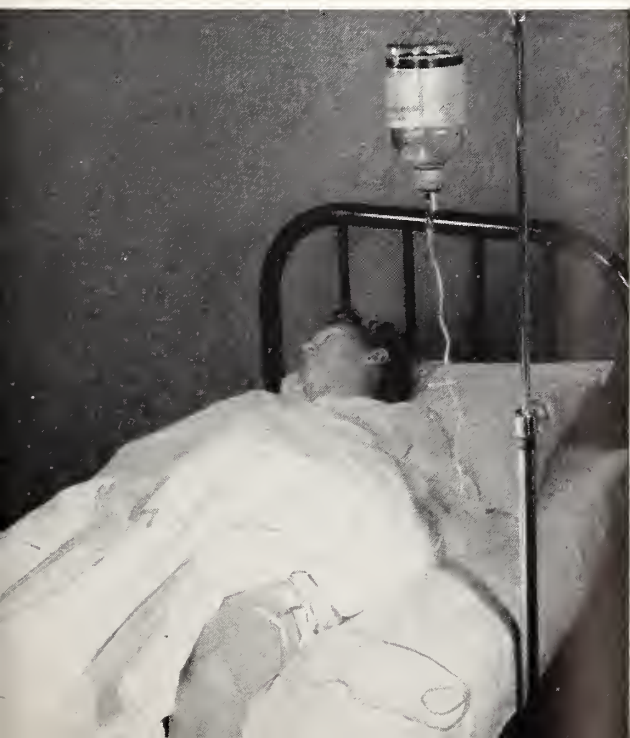


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1. Hechter, O.; Dopkeen, S. K., and Yudell, M. H.: The Clinical Use of Hyaluronidase in Hypodermoclysis, *J. Pediat.* 30:645 (June) 1947.
2. Schwartzman, J.; Henderson, A. T., and King, W. E.: Hyaluronidase in Fluid Administration: A Preliminary Report, *J. Pediat.* 33:267 (Sept.) 1948.

with hormones should be continued until reactivation or steady progression of the disease occurs. Cessation of therapy after reactivation may result in another regression. Change of therapy to another hormone may also bring about a second favorable response.

9. The mean duration of improvement of soft tissue lesions, treated either with testosterone or estrogen, is about 10 to 12 months; for bony lesions testosterone will produce a mean duration of improvement of about 11 to 12 months, whereas the mean duration of improvement with estrogen is 16 to 18 months.

10. The mean survival time after admission to this study of all patients who have died is 8.5 months for testosterone-treated patients and 9.8 months for estrogen-treated patients. Patients who showed improvement survived about twice as long as those who did not show improvement.

11. Both testosterone propionate and the estrogens, in these doses, produce unpleasant side effects in a high proportion of patients. Two side effects, edema and hypercalcemia, are dangerous and require constant observation of the patient and early corrective measures. Estrogen therapy may cause severe uterine bleeding requiring curettage. With prolonged bleeding, the possibility of endometrial carcinoma or activation of fibroids must be considered.

12. Histologic examination of biopsy and autopsy material collected in this study has not revealed any changes in tumor cells or stroma which would suggest an explanation of the mechanism of hormonal action in metastatic breast cancer. At times, however, there was complete disappearance of tumor in satellite skin nodules, in focal areas within the breast carcinoma, and in occasional lymph nodes previously replaced by tumor. The changes seen both in the tumor and stromal background in the cases responding to steroid therapy are comparable to the effects of irradiation.

#### MALIGNANT LESIONS OF THE MALE BREAST

Carcinoma of the male breast is not common. In fact, as of 1951, Campbell and Cummins<sup>21</sup> reported that only 13 well authenticated cases were on record. These were all associated with estrogenic therapy for prostatic carcinoma in the male. Regarding the question of etiology, they have stressed the point that "if estrogens are carcinogenic to the human male breasts, the occurrence of this lesion should be fairly common since estrogenic therapy for disseminated carcinoma of the prostate is practically a routine procedure." The implication of the above statement is that before estrogens can act as accelerating agents, the fundamental histological changes must have already been present.

Several interesting cases are reported in the litera-

ture. Howard and Grosjean<sup>22</sup> reported a case of "a man on whom a clinical diagnosis of carcinoma of the prostate with bone metastases was made on July 27, 1943. From this date until his death on January 4, 1948, he received a total of 40,280 mg. of diethylstilbestrol. At the time of death, bilateral scirrhous carcinoma of the breast was present." Abramson and Warshawsky<sup>23</sup> reported a case of unilateral breast malignancy in a male treated for prostatic carcinoma with 1,097 mg. of estrogens over 489 days. They pointed out in retrospect that the appearance of nodules in the breast should have suggested neoplasm. Entz<sup>24</sup> reported a case of what was thought to be metastases to the breast of prostatic carcinoma in a 49-year-old male being treated for 17 months with estrogens. He raises the question of whether or not estrogens actually enhanced the breast metastases and suggests that it would appear "advisable to treat the younger patients by castration rather than with estrogens."

*Treatment:* Castration is the only sure method of treatment, along with discontinuation of estrogen therapy. Treves, Abels, Woodard, and Farrow<sup>25</sup> describe the effects of castration on malignancy of the male breast. They came to the conclusion that about 50 per cent of the cases so treated show marked improvement and that malignancy so treated remains inactive for long periods.

#### CARCINOMA OF THE PROSTATE GLAND

In 1935, Kutscher and Wolbergs<sup>26</sup> isolated acid phosphatase and showed definitely that its origin was from the prostate gland and that it was active in acid solution only. In 1936, Gutman and Spraul<sup>27</sup> showed that the enzyme could be found only in the adult organ and not in the infant. They also were able to demonstrate the enzyme in malignancy of the prostate and in distant metastases. Huggins<sup>28</sup> in 1941 first showed the value of orchiectomy in inhibiting the growth of prostatic malignancy by research on dogs. Huggins<sup>15</sup> also demonstrated that "carcinoma of the prostate is most common in men between 40 and 90 years with the highest incidence at the ages of 60 to 70 years."

*Chemical Patho-physiology:* Huggins<sup>28</sup> was able to prove definitely the accelerating effect of testosterone on these tumors, and he showed that estrogens as well as orchiectomy were of value in inhibiting the growth of these tumors. Unfortunately, he also demonstrated that orchiectomy gave no more than temporary relief and was only palliative. The explanation for the failure of orchiectomy to entirely eliminate testosterone was interpreted on the basis of the remaining androgenic activity of the adrenal glands, which seemed to be stimulated following orchiectomy. Studies by Scott and Vermeulen<sup>29</sup> and later by Hug-



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gins and Scott<sup>30</sup> gave conclusive evidence that estrogens were of value in inhibiting the growth of prostatic carcinoma and of decreasing the 17-ketosteroids in the urine, showing that estrogens had effectively inhibited the secretions of androgens by the adrenal gland. This action has been explained by the inhibiting effect of estrogens upon the pituitary elaboration of gonadotropic hormone which stimulates the production of androgens by the adrenal gland. As Huggins states, "When stilbestrol is given, the urinary estrogens rise by virtue of the excretion of the administered drug, urinary gonadotropin levels fall, and androgen levels, as judged by urinary 17-ketosteroids, fall."

Nathanson<sup>1</sup> has demonstrated that castration and injection of estrogens produced little change in the acid phosphatase level if it is normal before therapy. Castration and injection of estrogens into patients with prostatic carcinoma having marked elevation of the acid phosphatase result in a sharp reduction of the level of the enzyme, but seldom to normal. Administration of androgens produces a sharp rise in the serum acid phosphatase.

*Clinical Treatment:* As has already been implied, three methods exist for a rational approach to the treatment of prostatic carcinoma. They are (1) orchiectomy, (2) administration of steroid hormones, and (3) adrenalectomy. All of the principles are based upon the already mentioned and well recognized fact, that testosterone is essential for the growth of prostatic carcinoma and metastases. The first method as devised by Huggins<sup>28</sup> was designed to abolish the primary source of testosterone production. The second method, as already stated, is based upon the assumption that estrogens will neutralize the effect of testosterone within the body or so depress the pituitary that the remaining source of testosterone (the adrenal gland) will be effectively inhibited. Thus, three methods are at hand for effective treatment. However, during the past ten years considerable controversy has arisen as to just how each should be used and the time of preference of one mode of therapy over the other.<sup>32</sup> As Nathanson<sup>1</sup> has shown, "Castration or hormonal therapy should not be resorted to in operable carcinoma of the prostate without metastases." He points out further, "Most patients who benefit from castration or estrogen therapy have recurrence of the signs and symptoms within a few years and many are not relieved for more than a few months."

Because the measures outlined have been shown to be only palliative in the majority of instances, this has been a source of disagreement as to what measures are indicated and at what time in the course of the disease. Huggins<sup>15</sup> is of the opinion that "if the lesion is confined to the prostate or nearly so, total prostatectomy by the perineal route is indicated; otherwise,

for most patients, orchiectomy is advised as soon as the diagnosis of advanced cancer has been established." He stresses the belief that orchiectomy has yielded better results than treatment with estrogens.

Nathanson<sup>20</sup> has summarized the question as follows: "Some advocate combined orchiectomy and estrogen therapy, but there are inconclusive data to indicate that this has a definite advantage over either method. Orchiectomy is the preferred technic if the patient is unreliable or cannot tolerate estrogens. It is also the procedure of choice where immediate relief of symptoms is desirable, since estrogens may require several weeks to produce the same effect. Estrogens may be used in all other situations and certainly if the patient is disinclined to accept orchiectomy." He states further that "the optimum time to initiate therapy has not been established. Two theories are supported. One states that therapy should not be instituted as long as the patient is asymptomatic; that probably orchiectomy should be used first for immediate relief and that estrogens be given when there is a return of symptoms. The other theory points out that the above theory may have many pitfalls. First, it assumes that the malignant cells will not be less responsive to therapy after a few months than with the immediate diagnosis, or in fact that they may become more resistant. And furthermore, that orchiectomy and estrogen therapy should be given together, one enhancing and supporting the effects of the other. At present it is generally accepted that treatment should probably be withheld in asymptomatic cases. No conclusive statement can be given as to how therapy should be given once it is decided upon; that is whether to combine orchiectomy with estrogens or to start each separately." He further states that "castration may occasionally be of value following recrudescence of the disease after preliminary successful treatment with estrogens. The reversal of this sequence may also be of benefit in a few cases."

Nesbit and Cummings<sup>31</sup> believe that "it therefore would appear rational to delay the institution of endocrine therapy until pain and cachexia develops, for only by this means can the patient hope to derive the dual benefits of this treatment: prolongation of life by suppression of carcinogenic activity and relief of pain." They report further that in some cases pain may only be relieved by castration when stilbestrol has been administered previously.

Bumpus, Massey, and Nation<sup>32</sup> express their opinion, "Since all forms of therapy to date have proved only palliative, the prolongation of such treatment seems preferable to its immediate total application." They believe that each method should be used separately to afford the patient the greatest relief. They also believe (contrary to Huggins' opinion) that stilbestrol alone in small daily dosages is sufficient to





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control the disease, and they have reported three patients who remained well after over two years of treatment on stilbestrol alone.

Emmett and Greene<sup>33</sup> state that "bilateral orchiectomy is especially efficacious when the metastatic growths have given rise to symptoms." They further question whether "prophylactic" orchiectomy (done in the early stages of the disease before metastases have appeared) influences the course of the disease.

Alyea<sup>34</sup> states that "any malignancy should be attacked from the start with the most efficient therapy. The treatment which offers the best chance of success should be first. Therefore, orchiectomy should be carried out as soon as the diagnosis of carcinoma of the prostate is made. This will remove the major part of the androgenic hormone. Then the extragonadal androgenic hormone should be inactivated by diethylstilbestrol. This should be started immediately after operation. In this way, as soon as the gonadal hormone has been eliminated, the estrogen will be given to inactivate at once any extratesticular androgens which may be produced by the adrenals or other glands. By orchiectomy we know we are eliminating the greater part of the offending hormone. By estrogen therapy we think we are inactivating it, but how much of it?"

Crane and Rosenbloom<sup>35</sup> concluded from their studies that "the treatment of choice in carcinoma of the prostate is through transurethral resection, castration, and continuous administration of stilbestrol. This is essentially the opinion of Chase, Burt, and Hess<sup>36</sup> too.

Herger and Sauer<sup>37</sup> believe that "orchiectomy should not be carried out indiscriminately in all cases." They have used as a criteria the rapid enlargement of the primary lesion. They further state that "castration is the more effective procedure if quick relief from pain is the object of therapy." They warn that "combined treatment does not offer any advantage over castration alone." They also point out that orchiectomy following stilbestrol therapy may be followed by improvement while estrogen administration following failure of orchiectomy to relieve pain is almost always ineffective.

*Clinical Results:* As has been stated above, the only benefit that can be expected with the above mentioned methods (except in a few rare cases) is the palliative relief of symptoms. Again we find that treatment is not curative. Nathanson<sup>1</sup> has pointed out that "certain cases do not respond to treatment at all, whereas others show striking clinical improvement and relief of pain. Those lesions which more nearly resemble the adult gland seem to respond best to the therapy." He has also noted that serial biopsies of prostatic tumors "reveal marked degenerative changes in the

cells when stilbestrol is given over a fairly long period of time."

McCullagh<sup>5</sup> states that "it should be clearly understood that castration and later estrogens are to be used as palliative and not curative treatment. Estrogen therapy should never replace surgery in operative prostatic carcinoma." Huggins<sup>15</sup> is of the opinion that "antiandrogenic measures effect an improvement in the disease in about 90 per cent of patients treated by excision of the testes or by administration of estrogens."

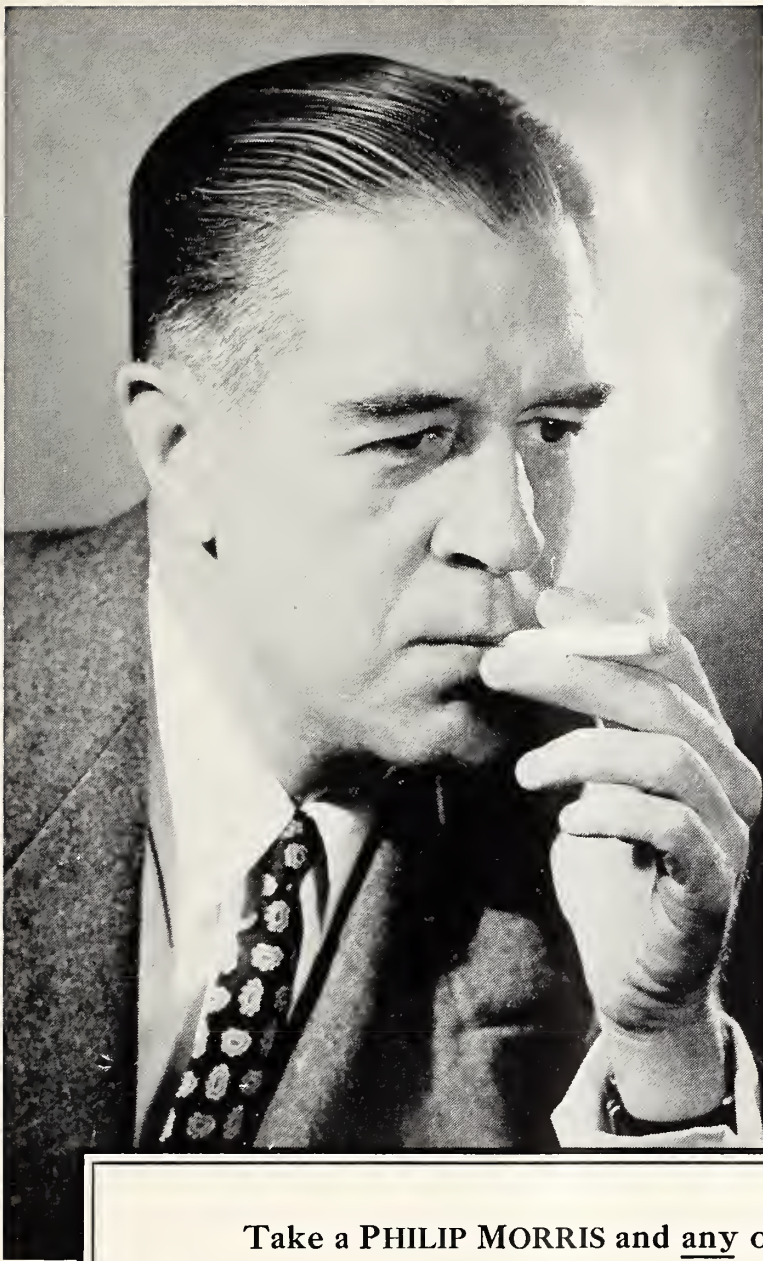
Nesbit and Cummings,<sup>31</sup> reporting on 75 cases observed for at least 21 months following orchiectomy, have demonstrated "(1) early and satisfactory relief of pain, which occurs in from 20 to 72 hours in most instances, (2) generally good increases in weight, and (3) most patients experienced more normal urination following castration." They stated further that "orchiectomy provides only temporary suppression of neoplastic activity." Also, "endocrine therapy suppresses the neoplastic development of both early and advanced cases and in each instance it produces a corresponding prolongation of life, *but* it does not permanently retard the growth of the primary tumor nor does it prevent the occurrence and the eventual progression of metastases."

Crane and Rosenbloom<sup>35</sup> in a study of 340 cases felt that "(1) subjective improvement was present earliest when castration and/or estrogen was combined with transurethral resection, (2) when employed with transurethral resection, castration alone is more effective than estrogen alone; estrogen does not substitute for castration but only reinforces it, (3) transurethral resection combined with castration and estrogen (usually stilbestrol) produced the earliest subjective improvement and the longest median survival time in this series."

Herger and Sauer<sup>37</sup> in a study of 130 cases conclude that "it has been our experience that spread or local extension of bone metastases is not arrested as a rule by androgen control treatment. Such treatment does not ensure developing metastases at a future time." Scott and Benjamin<sup>38</sup> reporting on bilateral orchiectomy in 82 cases state that "most of the patients treated by this method were either dead or had lost its initial benefits within 36 months." These were also essentially the findings of Stirling.<sup>39</sup>

As pointed out by Huggins and Johnson<sup>28</sup> there are "two factors of significance in determining the effectiveness of orchiectomy: the tumor must be androgen dependent and the testes must contribute functionally significant amounts of the total production of androgen." Also, "the beneficial effects of estrogens in our experience have not been prolonged nor have we encountered any other agent which would greatly benefit in post-orchiectomy failure." Vest and Fraz-





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ier<sup>40</sup> in their studies have shown that the average expected survival time with adequate treatment in advanced prostatic carcinoma is from 18 to 33 months.

*Undesirable Side Reactions of Stilbestrol:* McCullagh<sup>3</sup> reports "the untoward effects of stilbestrol therapy in men include nausea, vomiting, and in some muscle pains and edema. Complete impotence is the rule; the nipples and areolae become dark, and a rather striking degree of gynecomastia appears." Huggins<sup>15</sup> has pointed out the danger of inducing carcinoma of the breast with stilbestrol therapy. He also has noted that "lactation is not too uncommonly observed."

#### SUMMARY

An attempt has been made to review the most recent advances in the hormonal therapy of carcinoma of the breast and prostate. Careful consideration of the side effects to be expected from hormonal therapy and the drugs and dosages of choice is presented. The use of caution and good judgment with adequate experience is cited.

While the results with hormonal therapy have proved to be only palliative and not curative to date, continued research in this field may yet lead to a more adequate and longer-lasting treatment for cancer. As Rhoads<sup>41</sup> has so ably remarked, "We have high hopes that we can so define the disturbances which lead to the precancerous changes in such patients as to allow us to name the chemical compounds lacking or produced in excess. We hope at the same time, on the basis of the knowledge developed of hormone manufacture in man, to be able to correct the abnormality when defined, before cancer has fully developed and when the abnormal tissue still can return to normal stages under treatment."

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In 1939 the output of ethical drug products was estimated at about \$157,000,000 per year at the manufacturers' level. By 1947 the output had more than doubled. In 1951 it reached \$1,100,000,000. The antibiotics accounted for about 43 per cent of that total.

The National Foundation for Infantile Paralysis has announced the approval of research and professional education projects totalling \$2,586,271 for the period beginning in January, 1953. The awards go to 32 medical schools, hospitals, research institutions and educational organizations. Of the total authorized, \$1,585,465 was allocated for research seeking prevention of the disease and improved methods of treatment; \$1,000,806 was allocated for programs in professional education.



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## ANNOUNCEMENTS

The 13th annual essay contest of the Mississippi Valley Medical Society will be held in 1953, with May 1 as the deadline for submitting entries. A cash prize of \$100, a gold medal, and a certificate of award will be given for the best unpublished essay on any subject of general medical interest, including economics and education. Details of the contest may be secured from Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209 W.C.U. Building, Quincy, Illinois.

Qualifying examinations for fellowship in the United States Section of the International College of Surgeons will be held at the Cook County Graduate School of Medicine and the Cook County Hospital, Chicago, on the following dates: May 4 and 5, August 10 and 11, and November 2 and 3. Applicants are asked to write Harry A. Oberhelman, M.D., Secretary, Qualification and Examination Council, 1516 Lake Shore Drive, Chicago 10, Illinois.

The annual meeting of the American Goiter Association will be held at the Drake Hotel, Chicago, on May 7, 8, and 9, 1953. The scientific program will deal with goitre and other diseases of the thyroid gland.

The First World Congress on Fertility and Sterility will be held May 25-31, 1953, at the Henry Hudson Hotel, New York City. It is sponsored by the International Fertility Association with the cooperation of the American Society for the Study of Sterility. Twenty-three scientific sessions will be conducted in English, French, and Spanish, with the use of earphones and simultaneous translations, as in United Nations meetings. Reservations are to be made with the chairman of the Local Arrangements Committee, 1160 Fifth Avenue, New York 29, New York.

The Southwest Allergy Forum will convene at the Hotel Muehlebach, Kansas City, Missouri, on June 14 and continue through June 16. Those interested in participating in the program, devoted to practical aspects of allergy, are asked to write the president, Orval Withers, M.D., Bryant Building, Kansas City 6, Missouri. Members of the local committee, in addition to Dr. Withers, are Dr. Cecil Kohn, Dr. R. Dale Dickson, Dr. Frederic Speer, Dr. Stanley Goldman, Dr. Ralph Hale, Dr. Herbert Rinkel, and Dr. Vernon C. Wiksten. Reservations

should be made soon at the hotel; they may be cancelled later if necessary.

An advanced course in autoradiography and three basic courses in radioisotope techniques will be conducted at the Special Training Division of the Oak Ridge Institute of Nuclear Studies this spring and summer. The autoradiography course will be held from June 15 through June 25, and basic courses of four weeks duration will begin on June 8, July 6, and August 10.

Application forms and additional information may be obtained from the Special Training Division, Oak Ridge Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tennessee.

The Kansas Division of the American Cancer Society announces its 1953 contest for graduate students, interns, residents, and other scientific investigators. Prizes of \$500, \$300, and \$100 will be given winners in two classifications, pre-doctorate and post-doctorate, for work done in fields related to the growth, cause, diagnosis, or treatment of cancer. Full information and application blanks may be secured from the office of the Kansas Division, 824 Tyler Street, Topeka.

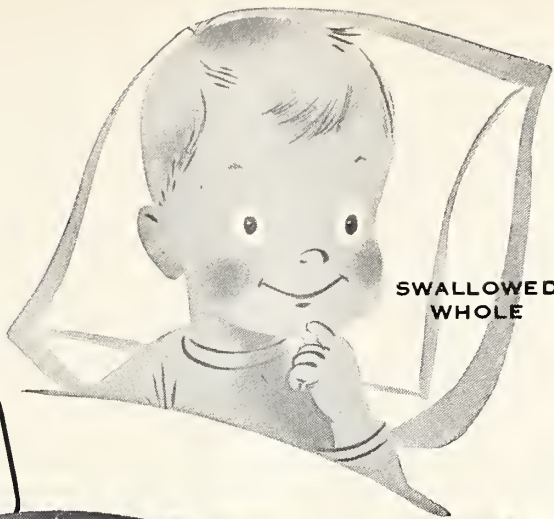
### AID TO MEDICAL EDUCATION

Nearly 37,000 physicians contributed more than \$3,150,000 in direct support of medical education last year. This total, however, does not include amounts given for buildings, endowments, scholarships, research and other special purposes. Dr. Donald G. Anderson, secretary of the A.M.A.'s Council on Medical Education and Hospitals, announced that reports from 76 of the country's 79 medical schools indicate that more than 29,000 doctors gave \$2,258,534 directly for teaching budgets.

The American Medical Education Foundation raised \$906,553 of the total from more than 7,000 individual contributors. The 1953 fund-raising drive has been launched with a third gift of \$500,000 from the A.M.A. Since its organization two years ago, the foundation has raised more than two million dollars from the medical profession for distribution "without strings attached" to medical schools.

Basic research involving the connective tissue, the framework of the human body, will be emphasized in 15 medical centers throughout the country through grants made by the Arthritis and Rheumatism Foundation. Fellowships totalling \$77,300 for research have been dispersed among 16 doctors specializing in rheumatic diseases.





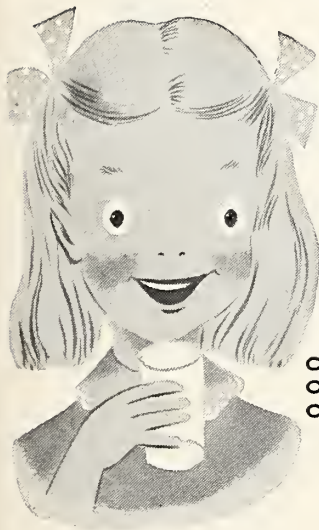
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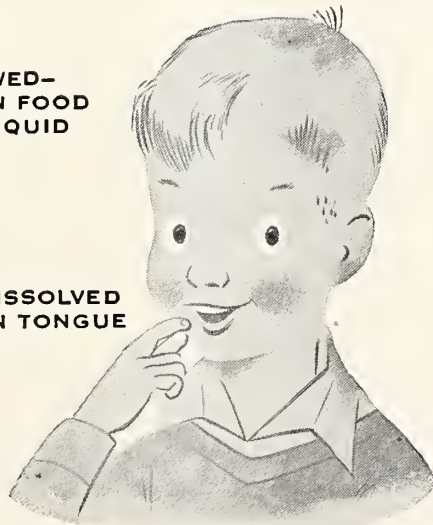
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


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## BOOK REVIEWS

*Standard Values in Blood.* Edited by D. C. Albritton. Published by W. B. Saunders Company, Philadelphia. 199 pages. Price \$4.50.

This compilation of data on the composition and reactions of blood was produced by a group of over 600 leading scientists, under the direction of the committee of the American Institute of Biological Sciences. This Institute is associated with the National Research Council as a part of the Council's Division of Biology and Agriculture. The book consists of tabular data concerning the normal levels of most of the constituents of blood in man and in many of the common experimental animals. In addition, several sections contain information about certain reactions of blood, such as blood clotting and changes in blood due to radiation and storage. Blood levels of some constituents during pregnancy and other non-pathological states are also included.

An outstanding feature of the tabulation is an attempt to furnish, along with the mean value and the range of values for a given constituent, an estimate of the reliability of that range. In as many cases as possible the range of a set of values is the "95 per cent range," that is, excludes the highest and lowest  $2\frac{1}{2}$  per cent of the data. This includes all the values falling within plus or minus two standard deviation units from the mean, and thus obviates the necessity of a calculation on the part of the reader to obtain the range from the standard deviation.

The book is divided into two sections, one containing the tabulated data, and the other the complete literature references from which the data were obtained. About one-third of the book is occupied by the bibliography.

The method of tabulating and labeling the data is, in some places, very intricate, but is probably necessary because of the large volume of material which is presented. The authors have been quite thorough both with regard to the types of blood constituents which were included and with regard to the data available to each type. In addition to all of the clinically important blood values, such information as levels of blood hormones, vitamins, and enzymes, as well as effective blood levels of therapeutic agents are included. A very satisfactory index was compiled by the authors.

The book will be of great value to medical and biological scientists interested in research involving blood constituents. It should save such an investigator many hours of arduous library work. It would not be of exceptional value to the average medical practitioner and was not so designed. All clinical

laboratories of any size would very likely profit by having this book available.—H. J. G.

*American Pocket Medical Dictionary.* 19th edition. Published by W. B. Saunders Company, Philadelphia. 639 pages. Price \$3.25 plain; \$3.75 with thumb index.

This dictionary, published early in 1953, is a book which will find ready acceptance by physicians and those in related professions. It is not comprehensive, nor is it intended to be; it is offered as a quick reference work, an extra, for those who do not have immediate access to a more extensive dictionary.

In preparing the work, the editorial staff drew freely from the 22nd edition of the American Illustrated Medical Dictionary (Dorland), published in 1951 by the same company. That fact attests to the dependability of the volume, which will be of practical value to all in medical or scientific work.—P. F.

*Nutrition and Diet in Health and Disease.* Sixth Edition. By James S. Lester and William J. Darby. Published by W. B. Saunders Company, Philadelphia. 710 pages, supplementary tables of food composition. Price \$10.

The new exchange method of calculating diabetic diets is a valuable addition to this volume. The discussion of the low sodium regimen and the rice diet has been revised. The section on atherosclerosis now includes a table of the cholesterol content of foods. The chapters on vitamins, the nutritional anemias, and the deficiency diseases have been rewritten. A table of the sodium and potassium content of foods and waters is useful to the physician and dietitian. The organization of the book is essentially the same as the earlier editions. It still remains a helpful reference.—S.K.

## ABSTRACTS FROM CURRENT LITERATURE

*Treatment of Amebiasis with Atabrine Combined with Carbarsonne.* By Ryle A. Radke, *Ann. Int. Med.*, 34:6, 1432-1444, June, 1951.

The author reports a patient who was critically ill with amebiasis in whom a liver abscess had penetrated the diaphragm, and in whom a bronchopleural fistula was present. He had received two courses of 10 grs. of emetine in less than a month with no response. Since there had been evidence that atabrine had depressed amebiasis in some war areas, the author



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thought it might be worth trying in this case. After four days on usual dosages of atabrine the patient made an amazing improvement, the temperature became normal and sputum soon ceased.

Carbarsone seemed to be most effective in destroying amoebic cysts in vitro, so it was given to the patient for a 10-day period in dosage of 0.25 gms. two to three times daily. Atabrine was also given for a 10-day period in dosage 0.1 gm. three times daily.

Emetine is a dangerous drug, some finding complications in 91 per cent of cases. Electrocardiographic changes were found in 74 per cent of a series of 38 cases, usually significant changes in the T wave.

A relapse rate of 21 per cent was reported on cases treated with emetine intramuscularly, with emetine bismuth iodide, quinoxyl and stovarsol by mouth, 48 per cent relapse after emetine alone, 42 per cent after diodoquin alone, 26 per cent after combined emetine and diodoquin, and 44 per cent after combined emetine and carbarsone. The authors report a relapse rate of 12 per cent after combined atabrine and carbarsone treatment.

This 12 per cent relapse rate was determined after cases were followed for 60 to 395 days by means of smears and cultures of material taken from patients at recheck sigmoidoscopic examination. Severe reactions were encountered in two cases, one a dermatitis due

to carbarsone, the other a toxic delirium due to atabrine.

Frequently repeated stool examinations were negative on amoebic suspect cases, the amoebae being found only by sigmoidoscopic examination, with aspiration of material from ulcers for study.

The author concludes that atabrine is an amebicidal agent which is relatively safe for use in the doses recommended.

It should be employed in conjunction with another amebicidal agent capable of eliminating the cysts of the organism.—D.R.D.

#### PACIFIERS FOR INFANTS

*The Treatment of "Colic" in Infancy by the Use of the Pacifier.* By Milton I. Levine and Anita I. Bell, *Jnl. Ped.*, 37:5, 750-755, Nov., 1950.

The so-called "colic" baby has been a problem for all pediatricians. The parents develop a degree of anxiety that frequently influences the future emotional stability of the child. Nearly all of these infants are hypertonic, differing markedly from the relaxed and placid infant who nurses and sleeps with complete satisfaction.

It is generally accepted on the basis of experimental studies that an infant not only has a sucking reflex but, more than that, a sucking urge—a definite need for oral satisfaction. This need is entirely separate from the necessity of sucking as an adjunct to eating. This fact was pointed out originally by Freud, who placed emphasis on the importance of the oral zone, not only in the desire for feeding but in the desire for sucking as well. It has also been pointed out how children, when deprived of oral satisfaction, resort to thumbsucking as a substitute.

Twenty-eight infants with histories typical of colic were placed on pacifiers, and in every instance except two the pacifier was readily accepted. With the exception of three infants, the pacifier was successful in relieving the irritability and crying of the infant and in causing a cessation of the symptoms of "colic." The use of the pacifier does not form a habit; the children discarded it spontaneously at an average age of 13.8 months. In only two of the 28 cases did the infants resort to thumbsucking during or after discontinuing the pacifier, and these two only while going to sleep after the pacifier had been discarded. The fact that certain crying infants do not respond to the pacifier by relaxation would lead to the conclusion that their difficulty was probably due to an etiological factor unrelated to the need for sucking.—D.R.D.

Attend the 94th annual session of the Kansas Medical Society, May 4-7, 1953, in Wichita.

#### CLASSIFIED ADVERTISEMENTS

**WANTED**—Resident in Pathology for approved residency. Opportunity for close but non-official association with medical school, and for learning basic principles of legal medicine. Stipend to be arranged. Apply to Personnel Office, St. Mary's Hospital, Kansas City, Missouri.

**WANTED**—Laboratory technicians. Pleasant working conditions. Infrequent week-end duty. No night work. New, well-equipped laboratory. More than adequate salary with extra consideration for those with experience. Apply to Personnel Office, St. Mary's Hospital, Kansas City, Missouri.

**WANTED**—Medical Secretary. Chief duties consist of typing surgical pathology, autopsy, and electrocardiogram reports. Lesser duties include filing, answering telephone, and miscellaneous office work. Good basic salary with special consideration for experienced secretary. Apply to Personnel Office, St. Mary's Hospital, Kansas City, Missouri.

**CLINIC GROUP** has opening for general practice and minimum of obstetrics to cover for obstetrician. Prosperous agricultural area, college town, excellent school system, very pleasant family community. Write the Journal 2-53.

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# THE JOURNAL

*of the*

## KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

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Volume LIV

APRIL, 1953

No. 4

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### *Greetings!*

It is a privilege and our pleasure to be hosts to the 94th Kansas Medical Society convention, scheduled for Wichita, May 4-7, 1953.

Our committees, headed by Dr. E. S. Brinton as general chairman, have prepared a program which, we think, will be of special interest to every member of the profession. We are sure the ladies will be pleased with the plans prepared by the Woman's Auxiliary to the Sedgwick County Medical Society, so be sure to bring the Mrs. with you.

A note to one of the hotels to reserve a room now would save some scrambling later. May we suggest you write today for your reservation.

The medical assistants will have their meeting in Wichita, Sunday and Monday, May 3 and 4. We hope you can make it convenient for your "Girl Friday" to attend.

The meetings will be held as usual in the Forum Arcadia (entrance on Water Street at William Street).

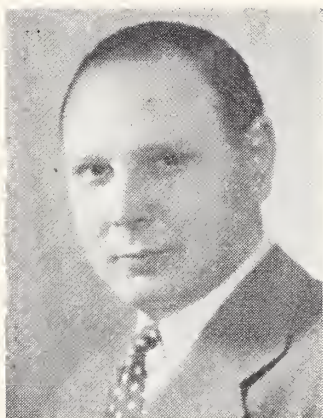
We're expecting you to help us celebrate the Sedgwick County Medical Society's 50th anniversary by attending the Kansas Medical Society convention.

*Fraternally yours,*

HOWARD C. CLARK, M.D., *President*  
*Sedgwick County Medical Society*



## Guest Speakers



CHARLES P. BAILEY, M.D.

*Philadelphia, Pennsylvania*

Graduate, Hahnemann Medical College, 1932; Professor of Thoracic Surgery, Hahnemann Medical College and Hospital; Guest Lecturer, Graduate School, University of Pennsylvania School of Medicine; Recipient, B'nai B'rith Inter-Faith Award for Man of the Year, 1950; Diplomate, American Board of Thoracic Surgery; Fellow, American College of Surgeons, International College of Surgeons, and American College of Chest Physicians.

Specialty: Thoracic Surgery.

ELMER BELT, M.D.

*Los Angeles, California*

Graduate, University of California Medical School, 1920; Associate Professor of Urology, College of Medical Evangelists; Attending Urologist, Hospital of Good Samaritan; Consultant Urologist, Orange County Hospital and Children's Hospital; Chief, Urology Service, Ventura County Hospital; Diplomate, American Board of Urology; Fellow, American College of Surgeons, International College of Surgeons.

Specialty: Urology.



ARTHUR C. CURTIS, M.D.

*Ann Arbor, Michigan*

Graduate, University of Michigan Medical School, 1925; Professor of Dermatology and Syphilology, University of Michigan Medical School; Attending Physician, St. Joseph's Mercy Hospital; Consultant, United States Public Health Service; Special Consultant to Surgeon General of United States Army; Diplomate, American Board of Dermatology and Syphilology; Fellow, American College of Physicians; Member, American Society of Clinical Investigation, American Academy of Dermatology and Syphilology.

Specialty: Dermatology and Syphilology.

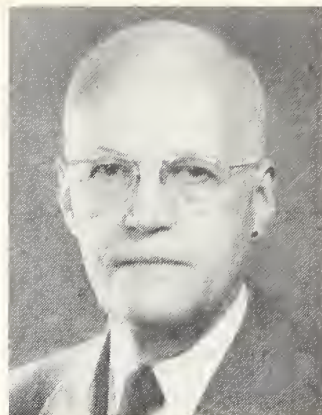




**HAROLD L. HICKEY, M.D.***Denver, Colorado*

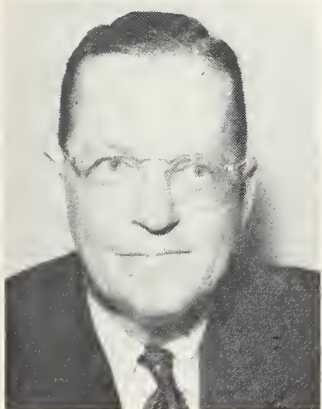
Graduate, Northwestern University Medical School, 1917; Clinical Professor of Otolaryngology and Head of Division, University of Colorado Medical Center; Senior Consultant in Otolaryngology, Fitzsimons Army Hospital; Past President, Colorado Otolaryngological Society; Diplomate, American Board of Otolaryngology; Fellow, American Academy of Ophthalmology and Otolaryngology, American Laryngological, Rhinological and Otolological Society, American Laryngological Association.

Specialty: Otolaryngology.

**C. GORDON JOHNSON, M.D.***New Orleans, Louisiana*

Graduate, Tulane University of Louisiana School of Medicine, 1931; Professor of Clinical Gynecology and Obstetrics, Tulane University of Louisiana School of Medicine; Head, Department of Gynecology and Obstetrics, Brown McCarty Clinic, New Orleans; Diplomate, American Board of Obstetrics and Gynecology; Fellow, American College of Surgeons; Member, Central Association of Obstetricians and Gynecologists, American Society for the Study of Sterility.

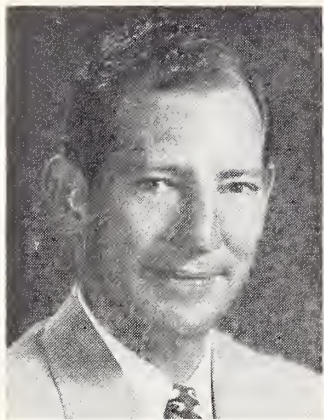
Specialty: Obstetrics and Gynecology.

**PETER C. KRONFELD, M.D.***Chicago, Illinois*

Graduate, University of Vienna, 1923; Professor of Ophthalmology, University of Illinois College of Medicine; in 1927 Assistant Ophthalmologist, First Eye Clinic, University of Vienna; Diplomate, American Board of Ophthalmology; Fellow, American Academy of Ophthalmology and Otolaryngology; Member, American Ophthalmological Society, Association for Research in Ophthalmology.

Specialty: Ophthalmology.





FRANK R. LOCK, M.D.

*Winston-Salem, North Carolina*

Graduate, Tulane University of Louisiana School of Medicine, 1935; Professor of Obstetrics and Gynecology, Bowman Gray School of Medicine of Wake Forest College; Chief of Obstetrics and Gynecology, North Carolina Baptist Hospital; Diplomate, American Board of Obstetrics and Gynecology; Member, South Atlantic Association of Obstetricians and Gynecologists, Association for the Study of Internal Secretions.

Specialty: Obstetrics and Gynecology.

EDWARD B. D. NEUHAUSER, M.D.

*Boston, Massachusetts*

Graduate, University of Pennsylvania School of Medicine, 1934; Associate Radiologist, Peter Bent Brigham Hospital; Consultant Roentgenologist, Massachusetts Hospital; Instructor in Roentgenology, Harvard Medical School; Diplomate, American Board of Radiology; Member, American Roentgen Ray Society, New England Roentgen Ray Society, Radiological Society of North America.

Specialty: Radiology.



WILLIAM D. ROBINSON, M.D.

*Ann Arbor, Michigan*

Graduate, University of Michigan Medical School, 1934; Professor of Internal Medicine and in charge of Rackham Arthritis Research Unit, University of Michigan Medical School; Editor, University of Michigan Medical Bulletin; Editorial Chairman for American Rheumatism Association; Diplomate, American Board of Internal Medicine; Fellow, American College of Physicians; Member, American Federation for Clinical Research, Central Society for Clinical Research, Central Clinical Research Club, Michigan Rheumatism Association.

Specialty: Internal Medicine.





## EDWARD H. RYNEARSON, M.D.

*Rochester, Minnesota*

Graduate, University of Pittsburgh School of Medicine, 1926; Consultant, Division of Medicine, Mayo Clinic; Professor of Medicine, Mayo Foundation; Diplomate, American Board of Internal Medicine; Fellow, American College of Physicians; Member, American Diabetes Association, Association for the Study of Internal Secretions, Central Society for Clinical Research.

Specialty: Internal Medicine.

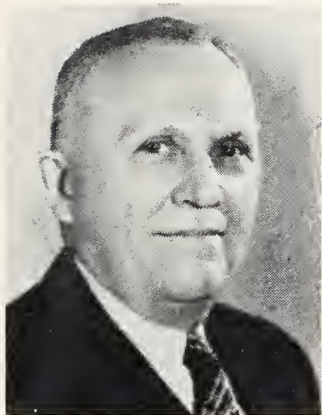


## ROBERT L. SANDERS, M.D.

*Memphis, Tennessee*

Graduate, University of Nashville Medical Department, 1906; Associate Professor of Surgery, University of Tennessee College of Medicine; Active Staff, Baptist Memorial Hospital, Memphis; Diplomate, American Board of Surgery; Fellow, American College of Surgeons; Member, Southern Surgical Association, Southeastern Surgical Congress, Western Surgical Association, National Gastroenterological Association.

Specialty: Surgery.



## HUGH M. A. SMITH, M.D.

*Memphis, Tennessee*

Graduate, University of Tennessee College of Medicine, 1933; Associate Professor of Orthopedic Surgery, University of Tennessee College of Medicine; Consultant in Orthopedic Surgery for United States Air Force; Diplomate, American Board of Orthopedic Surgery; Fellow, American College of Surgeons; Member, American Academy of Orthopedic Surgeons, American Orthopedic Association, Southeastern Surgical Congress.

Specialty: Orthopedics.





ORVAR SWENSON, M.D.

*Boston, Massachusetts*

Graduate, Harvard Medical School, 1937; Associate Professor of Surgery, Tufts College Medical School; Senior Surgeon, New England Center Hospital; Surgeon in Chief, Boston Floating Hospital for Infants and Children; Member, Associate Staff, New England Peabody Home for Crippled Children; Diplomate, American Board of Surgery; Fellow, American College of Surgeons; Associate Fellow in Surgery, American Academy of Pediatrics; Member, New England Pediatrics Society, Society of University Surgeons, Boston Surgical Society, New England Surgical Society.

Specialty: Pediatric Surgery.

## Annual Meeting Committees

General Chairman, E. S. Brinton

### ARRANGEMENTS

H. W. Brooks, Chairman; H. O. Anderson, A. L. Ashmore, H. L. Barry, C. L. Scuka.

### PUBLICITY

D. P. Trees, Chairman; L. A. Donnell, R. M. Gouldner.

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### COMMERCIAL EXHIBITS

R. K. Purves, Chairman; W. P. McKnight, Co-Chairman; E. G. Anderson, B. W. Barker, R. L. Brown, B. H. Buck, J. W. Graves, C. L. Gray, P. A. Kaelson, Jr., B. M. Matassarini, D. W. Peters.

### SCIENTIFIC EXHIBITS

B. E. Stofer, Chairman; H. W. Brooks, H. C. Blaylock, H. O. Marsh, P. H. Wedin.

### ENTERTAINMENT

W. J. Kiser, Chairman; G. F. Corrigan, G. F. Gsell, C. T. Hagan, C. W. Miller, D. P. Trees.

### SCIENTIFIC SPEAKERS

J. B. Fisher, Chairman; N. L. Francis, Co-Chairman; E. W. Crow, E. X. Crowley, J. H. Holt, W. F. McGuire, H. O. Marsh, F. W. Matassarini, B. E. Stofer, G. R. Tonn.

TELEPHONE NUMBERS AT THE FORUM—7-4754 and 7-4940



# Schedule of Events

94th Annual Session

Wichita, Kansas, May 3, 4, 5, 6, 7, 1953

## Sunday, May 3

- 12:30 Annual Meeting, Board of Directors, Kansas  
Physicians' Service  
Allis Hotel, East Room

## Monday Morning, May 4

- 10:00 Practice Rounds, Kansas Medical Golfing Association  
McDonald Park, Yale and Country Club Place  
(East on Central to Yale, North on Yale to Country Club Place)
- 10:00 Practice Shooting, Kansas Medical Skeet and Trapshooting Association  
Arkansas Valley Gun Club, East Pawnee Road  
(Across from Cessna)
- 10:00 Business Session, Kansas Chapter, American Academy of General Practice. See Page 167

## Monday Afternoon, May 4

- 1:00 Competitive Golfing, Kansas Medical Golfing Association  
McDonald Park, Yale and Country Club Place  
(East on Central to Yale, North on Yale to Country Club Place)
- 1:00 Competitive Shooting, Kansas Medical Skeet and Trapshooting Association  
Arkansas Valley Gun Club, East Pawnee Road  
(Across from Cessna)
- 1:45 Scientific Session, Kansas Chapter, American Academy of General Practice. See Page 167
- 3:00 Viewing of Exhibits at Forum by Kansas Medical Assistants' Society

## Monday Evening, May 4

- 7:00 Tournament Banquet  
Broadview Hotel, English Room  
Awarding of Golf and Trapshooting Prizes  
Brief Business Meeting  
Entertainment
- 7:00 Informal Dinner Dance and Program, Kansas Chapter, American Academy of General Practice. See Page 167
- ## Tuesday Morning, May 5
- 8:00 Blue Shield Physicians Relations Committee Breakfast  
Allis Hotel, West Room
- 8:00 Registration  
Forum, North Entrance  
Open 8:00 A.M. to 5:00 P.M.  
Opening of Scientific and Technical Exhibits

## FIRST GENERAL SESSION

- Presiding: Howard C. Clark, M.D., Wichita, Kansas
- 9:15 Address of Welcome  
HOWARD C. CLARK, M.D., Wichita, Kansas,  
President, Sedgwick County Medical Society
- 9:30 Facts to be Learned from Study of Maternal Deaths  
FRANK R. LOCK, M.D., Winston-Salem, North Carolina
- 10:05 The Medical and Surgical Treatment of Goiter  
EDWARD H. RYNEARSON, M.D., Rochester, Minnesota
- 10:35 Intermission to Visit Exhibits

TELEPHONE NUMBERS AT THE FORUM—7-4754 and 7-4940

**Tuesday Morning, May 5 (Continued)****SECOND GENERAL SESSION**

Presiding: George E. Burket, M.D., Kingman, Kansas

10:50 Prostatic Cancer

ELMER BELT, M.D., Los Angeles, California

11:25 The Peptic Ulcer Problem

ROBERT L. SANDERS, M.D., Memphis, Tennessee

12:00 Luncheon

Forum, Rose Room—Annex

Presiding: Earl L. Mills, M.D., Wichita, Kansas

**Tuesday Afternoon, May 5****THIRD GENERAL SESSION**

Presiding: Robert G. Heasty, M.D., Manhattan, Kansas

2:00 Gynecological Lower Abdominal Pain

C. GORDON JOHNSON, M.D., New Orleans, Louisiana

2:35 Obstructive Lesions of the Gastrointestinal Tract

EDWARD B. D. NEUHAUSER, M.D., Boston, Massachusetts

3:05 Intermission to Visit Exhibits

**FOURTH GENERAL SESSION**

Presiding: Bertrand I. Krehbiel, M.D., Topeka, Kansas

3:20 Some Common Surgical Problems in Infants and Children

ORVAR SWENSON, M.D., Boston, Massachusetts

3:55 Toxemia

FRANK R. LOCK, M.D., Winston-Salem, North Carolina

**Tuesday Evening, May 5**

6:00 House of Delegates Dinner and Meeting  
Allis Hotel, Ballroom

6:30 Kansas State Obstetrical Society Dinner and Meeting  
Broadview Hotel, English Room

6:30 Kansas Society of Pathologists Dinner and Meeting  
Lassen Hotel, Frontier Room

**Wednesday Morning, May 6**

7:45 Vocational Rehabilitation Service, Professional Advisory Committee Breakfast and Meeting

Allis Hotel, West Room

8:00 Kansas Radiological Society Breakfast and Meeting

Broadview Hotel, English Room

8:00 Medical Veterans Society Breakfast and Meeting (All Veterans Invited)

Broadview Hotel, English Room

8:30 Registration

Forum, North Entrance

Open 8:30 A.M. to 5:00 P.M.

Opening of Scientific and Technical Exhibits

**FIFTH GENERAL SESSION**

Presiding: P. E. Hiebert, M.D., Kansas City, Kansas

9:30 Role of Roentgen Irradiation in the Treatment of Benign and Malignant Tumors in Childhood

EDWARD B. D. NEUHAUSER, M.D., Boston, Massachusetts

10:05 Hysterectomy

C. GORDON JOHNSON, M.D., New Orleans, Louisiana

10:35 Intermission to Visit Exhibits

**SIXTH GENERAL SESSION**

Presiding: Edward J. Ryan, M.D., Emporia, Kansas

10:50 Hirschsprung's Disease

ORVAR SWENSON, M.D., Boston, Massachusetts

11:25 Syndromes Resulting from Tumor and Hyperplasia of Adrenal Cortex

EDWARD H. RYNEARSON, M.D., Rochester, Minnesota

12:00 Luncheon

Forum, Rose Room—Annex

Presiding: Leo K. Crumpacker, M.D., Wichita, Kansas

**TELEPHONE NUMBERS AT THE FORUM—7-4754 and 7-4940**



**Wednesday Afternoon, May 6****SEVENTH GENERAL SESSION**

Presiding: H. St. Clair O'Donnell, M.D., Ellsworth, Kansas

2:00 Painful Shoulders

HUGH M. A. SMITH, M.D., Memphis, Tennessee

2:35 Plastic Operation on Renal Pelvis

ELMER BELT, M.D., Los Angeles, California

3:05 Intermission to Visit Exhibits

3:00 Kansas Society of Orthopedists Business Meeting

Home of H. O. Anderson, M.D.  
1501 Fairmount

**EIGHTH GENERAL SESSION**

Presiding: Warren F. Bernstorf, M.D., Winfield, Kansas

3:20 Surgery of Mitral Stenosis

CHARLES P. BAILEY, M.D., Philadelphia, Pennsylvania

3:55 The Cutaneous Manifestations of Systemic Disease

ARTHUR C. CURTIS, M.D., Ann Arbor, Michigan

**Wednesday Evening, May 6**

7:00 Annual Banquet

Broadview Hotel, Ballroom

Presiding: Warren F. Bernstorf, M.D., Winfield, Kansas, President, Kansas Medical Society

Music by Wichita Kiwanis Club Chorus  
Dance

**Thursday Morning, May 7**

8:00 Kansas Society of Dermatologists Breakfast and Meeting

Lassen Hotel, Wheat Shockers Room

8:30 Registration

Forum, North Entrance

Open 8:30 A.M. to 5:00 P.M.

Opening of Scientific and Technical Exhibits

**NINTH GENERAL SESSION**

Presiding: Woodrow M. Campion, M.D., Liberal, Kansas

9:30 The Present Day Management of Rheumatoid Arthritis

WILLIAM D. ROBINSON, M.D., Ann Arbor, Michigan

10:05 Skin Manifestations of Lipid Diseases

ARTHUR C. CURTIS, M.D., Ann Arbor, Michigan

10:35 Intermission to Visit Exhibits

**TENTH GENERAL SESSION**

Presiding: George W. Hammel, M.D., El Dorado, Kansas

10:50 Emergency Care of Compound Fractures

HUGH M. A. SMITH, M.D., Memphis, Tennessee

11:25 Surgery for Coronary Artery Disease

CHARLES P. BAILEY, M.D., Philadelphia, Pennsylvania

12:00 Advances in Understanding and Management of Gout

WILLIAM D. ROBINSON, M.D., Ann Arbor, Michigan

1:00 House of Delegates Luncheon and Meeting

Allis Hotel, Ballroom

# Eye, Ear, Nose, and Throat Section

## Tuesday Morning, May 5

8:00 Registration  
Forum, North Entrance  
Open 8:00 A.M. to 5:00 P.M.

### FIRST SESSION

Presiding: Jack D. Weaver, M.D., Wichita,  
Kansas

9:30 Acutely Inflamed Eye  
PETER C. KRONFELD, M.D., Chicago, Illinois

10:30 Intermission to Visit Exhibits

### SECOND SESSION

Presiding: Dale D. Vermillion, M.D., Good-  
land, Kansas

11:00 Management of Acute Laryngotracheobron-  
chitis  
HAROLD L. HICKEY, M.D., Denver, Colorado

12:00 Luncheon  
Rose Room—Annex  
Presiding: Earl L. Mills, M.D., Wichita, Kan-  
sas

## Tuesday Afternoon, May 5

### THIRD SESSION

Presiding: James E. Hill, M.D., Arkansas City,  
Kansas

2:00 The Scleral Resection Operation for Retinal  
Detachment  
PETER C. KRONFELD, M.D., Chicago, Illinois

3:00 Intermission to Visit Exhibits

### FOURTH SESSION

Presiding: Ruth Montgomery-Short, M.D.,  
Halstead, Kansas

3:30 Clinical and Pathologic Consideration of Tu-  
mors of the Nasal Septum and Practical  
Application of Pathologic Tissue Examina-  
tion

HAROLD L. HICKEY, M.D., Denver, Colorado

4:30 Business Meeting following Scientific Session

## Wednesday Morning, May 6

8:30 Registration  
Forum, North Entrance  
Open 8:30 A.M. to 5:00 P.M.

### FIFTH SESSION

Presiding: G. O'Neil Proud, M.D., Kansas  
City, Kansas

9:30 Drug Therapy of Disease in Otolaryngology  
and Bilateral Abductor Paralysis of the  
Vocal Cords

HAROLD L. HICKEY, M.D., Denver, Colorado

10:30 Intermission to Visit Exhibits

### SIXTH SESSION

Presiding: Clarence D. Kosar, M.D., Concordia

11:00 The Present State of Tonography  
PETER C. KRONFELD, M.D., Chicago, Illinois

12:00 Luncheon  
Rose Room—Annex  
Presiding: Leo K. Crumpacker, M.D., Wich-  
ita, Kansas

## Wednesday Afternoon, May 6

### SEVENTH SESSION

Presiding: Joseph H. Johnson, M.D., El Do-  
rado, Kansas

2:00 Modern Conception of Acute and Chronic  
Otitis Media

HAROLD L. HICKEY, M.D., Denver, Colorado

3:00 Intermission to Visit Exhibits

### EIGHTH SESSION

Presiding: James H. Enns, M.D., Newton,  
Kansas

3:30 Newer Drugs in Ophthalmology  
PETER C. KRONFELD, M.D., Chicago, Illinois

TELEPHONE NUMBERS AT THE FORUM—7-4754 and 7-4940



ANNUAL ASSEMBLY

Kansas Chapter, American Academy  
of General Practice

Broadview Hotel, Wichita, Kansas



Alex Dreier

**Monday Morning, May 4**

3:00 An Appreciation of the General Practitioner  
as Seen by the Surgeon

ROBERT L. SANDERS, M.D., Memphis, Tenn.

**BUSINESS SESSION**

10:00 English Room

Presiding: Albert C. Harms, M.D., Kansas  
City, President

3:30 Round Table Discussion—Questions and  
Answers

**Monday Afternoon, May 4**

**Monday Evening, May 4**

**SCIENTIFIC SESSION**

**INFORMAL DINNER DANCE**

English Room

Broadview Hotel Ballroom

Presiding: Albert C. Harms, M.D., Kansas  
City, President

Presiding: Albert C. Harms, M.D., Kansas  
City, President

1:45 The Gallbladder Problem

ROBERT L. SANDERS, M.D., Memphis, Tenn.

6:00 Cocktails

2:15 Office Procedures in Obstetrics and Gynecology

C. GORDON JOHNSON, M.D., New Orleans,  
Louisiana

7:00 Dinner

2:45 Intermission

"Where Do We Go From Here?"

MR. ALEX DREIER, Chicago, Illinois

Dancing to Music of Pee Wee Hunt

# Woman's Auxiliary to the Kansas Medical Society

Annual Meeting, May 4, 5, and 6, 1953

Wichita, Kansas

## MONDAY, MAY 4

1:00- 4:00 Registration

Hotel Broadview

2:00- 4:00 Tea for Wives of General Practitioners.  
All Auxiliary Members Invited.

Home of Dr. and Mrs. Bruce P. Meeker  
3330 Country Club Place

## TUESDAY, MAY 5

9:00- 4:00 Registration

Forum—Arcadia

9:45 Coffee—Members at Large and Board  
of Directors

Helzberg's Kansan Room  
219 East Douglas

10:30 Pre-Convention Board of Directors  
Meeting

Helzberg's Kansan Room  
219 East Douglas

12:45 Luncheon

Hotel Allis Ballroom

Presentation of Past State Presidents'  
Pins

Style Show by Woolf Brothers, Inc.

6:00

Past State Presidents' Dinner

Innes Tea Room

## WEDNESDAY, MAY 6

9:00- 4:00 Registration

Forum—Arcadia

9:00

General Session

George Innes Store Auditorium, Seventh  
Floor

Market Street Entrance

12:45

Luncheon Honoring Mrs. Leo J. Schae-  
fer, National President-Elect, and  
New State Officers. Special Table for  
Councilors and Members-at-Large

Hotel Lassen Ballroom

3:30

Post-Convention Board of Directors  
Meeting

Hotel Lassen

7:00

Annual Kansas Medical Society Banquet  
Hotel Broadview Ballroom

## THURSDAY, MAY 7

9:00-12:00 Registration

Forum—Arcadia



# Kansas Medical Assistants' Society

Annual Meeting, May 3 and 4, 1953

Wichita, Kansas—Hotel Allis

## SATURDAY, MAY 2

8:00 Entertainment for Early Arrivals  
Empire Room

## SUNDAY, MAY 3

9:00 Registration  
Lounge

9:00 Coffee (Serving until 11:00)  
West Room

Afternoon Program—Empire Room

2:00 Address of Welcome  
Howard C. Clark, M.D., Wichita, President,  
Sedgwick County Medical Society

2:10 Response to Address of Welcome  
Warren F. Bernstorf, M.D., Winfield, Presi-  
dent, Kansas Medical Society

2:30 Public Relations  
Clyde W. Miller, M.D., Wichita

3:00 The Sun and Your Skin  
J. V. Van Cleve, M.D., Wichita

3:30 New Phases in Pediatrics  
W. F. McGuire, M.D., Wichita

4:00 Business Meeting and Election of Officers

6:30 Buffet Supper "On the Farm"  
Ballroom

## MONDAY, MAY 4

9:00 Registration  
Lounge

Morning Program—Empire Room

10:00 Meeting Called to Order  
Mrs. Charlotte Parish, Wichita, President, Kan-  
sas Medical Assistants' Society

10:10 Greetings  
Mrs. Donna Copley, Wichita, President, Sedg-  
wick County Medical Assistants' Society

10:15 Our Experiences during the State Legislature  
Mr. Oliver E. Ebel, Topeka, Executive Secre-  
tary, Kansas Medical Society

10:45 Radioactive Isotopes in Medicine  
Homer L. Hiebert, M.D., Topeka

11:15 Problems of Juvenile Delinquency  
Lt. William Friesen, Wichita, Public Relations  
Director, Wichita Police Department

12:30 Luncheon  
Ballroom  
Freedom Is Your Job

Mr. Thomas Orr, Wichita, Executive Secre-  
tary, Kansas Independent Oil and Gas As-  
sociation

2:30 Installation of Officers

3:00 Viewing of Scientific and Technical Exhibits  
Wichita Forum

## Scientific Exhibits

- Hearing and Speech—LaVerne B. Spake, M.D., Kansas City
- Heredity Deforming Chondrodysplasia—Warren S. Peiper, M.D., William G. Weston, M.D., and Roscoe F. Morton, M.D., Arkansas City
- Fractures of Femoral Neck and Shaft—Wendell A. Grosjean, M.D., and Howard E. Snyder, M.D., Winfield
- A Critical Study of Postoperative Relief in Protological Surgery—Claude C. Tucker, M.D., Wichita
- Tracer Studies of the Thyroid—Homer L. Hiebert, M.D., Topeka
- Dermatomyositis Associated with Neoplasm—H. C. Blaylock, M.D., Wichita
- Fractures of the Femoral Shaft in Children—William R. Miller, M.D., Wichita
- Conservative Treatment of Hydronephrosis—Harold F. O'Donnell, M.D., and William H. Browning, M.D., Wichita
- Uses of Radiiodine and Radiophosphorus—Thomas J. Luellen, M.D., Charles M. White, M.D., James R. Stark, M.D., Philip W. Russell, M.D., and Robert P. Norris, M.D., Wichita
- The Effect of Drugs on the Autonomic Nervous System—E. Grey Dimond, M.D., R. E. Green, M.D., and Kenneth A. Powell, Kansas City
- Basal Cell Carcinoma, a Malignant Disease—Harold W. Brooks, M.D., Wichita
- Cerebral Angiography—Arthur H. Bacon, M.D., Wichita, and J. R. Kline, M.D., Wichita
- Bone Tumors—Departments of Radiology and Pathology, St. Francis Hospital, Wichita
- Cerebral Palsy is Treatable—Martin F. Palmer, Sc.D., C. T. Hinshaw, M.D., Henry O. Marsh, M.D., Wichita
- A Demonstration of a New Antibiotic Illustrating Antagonism among Streptococci—Noble P. Sherwood, M.D., Lawrence
- Demonstration of a New Streptococcal Proteinase for Partially Denatured Human and Gamma Globulin—Noble P. Sherwood, M.D., Lawrence
- The Murray Plate Method for Demonstrating Hyaluronidase—Noble P. Sherwood, M.D., Lawrence
- Traumatic Pneumothorax—Ben H. Buck, Jr., M.D., Wichita
- Additional Exhibitors—Kansas Radiological Society  
C. F. Taylor, M.D., Norton, Benjamin M. Matas-sarin, M.D., Wichita

## Technical Exhibits

1. Eli Lilly and Company
2. Wm. S. Merrell Company
4. Schering Corporation
- 5 and 6. Munns Medical Supply Company, Inc.
7. W. B. Saunders Company
8. G. D. Searle & Company
9. Parke Davis & Company
10. Medco Products Company
11. Lederle Laboratories Div., American Cyanamid Co.
12. A. H. Robins Company, Inc.
13. Sharp & Dohme, Incorporated
14. Ayerst, McKenna & Harrison, Ltd.
15. Mead Johnson & Company
16. M & R Dietetic Laboratories, Inc.
17. Q-Test Distributors of Kansas City
18. Charles Pfizer & Co., Inc.
22. Brown & Williamson Tobacco Corporation
23. Westinghouse Electric Corporation, X-Ray Division
24. Coe Surgical Supply Company
25. Pet Milk Company
26. Bilhuber-Knoll Corporation
27. Goetze-Niemer Company
30. H. G. Fischer & Company
31. American Optical Company
32. Sandoz Chemical Works, Incorporated
33. J. B. Lippincott Company
34. Ciba Pharmaceutical Products, Inc.
35. Blue Cross-Blue Shield
36. Coufal-Keleket X-ray Company
37. Winthrop Stearns Chemical Company, Inc.
38. J. B. Roerig and Company
39. Wyeth, Incorporated
40. Ethicon Suture Laboratories, Incorporated
43. The Zemmer Company
44. McCormick Corset Shop
45. S. H. Camp and Company
48. Doho Chemical Corporation
49. Washington National Insurance Company
50. Holland-Rantos Company, Incorporated
51. The S. E. Massengill Company
52. C. B. Fleet Company, Incorporated
53. Brown & Williamson Tobacco Corporation
- 54, 55, 56. Mid-West Surgical Supply Company
57. Medical Protective Company
60. Quinton-Duffens Optical Company
61. The Page Milk Company
62. United Medical Equipment Company
63. Ortho Pharmaceutical Corporation
64. National Drug Company
65. Burroughs Wellcome & Co. (U.S.A.) Inc.
66. E. R. Squibb & Sons
67. General Electric Company, X-ray Department
70. Lanteen Medical Laboratories, Inc.
71. Gerber Products Company
72. Ames Company, Incorporated
78. Greb X-Ray Company
79. Hoffmann-La Roche, Incorporated
80. Commercial Insurance Company
81. Wm. P. Poythress & Company, Inc.
- 82 and 83. Sealy Mattress Company
- 84 and 85. The Coca-Cola Company
86. Carroll Dunham Smith Pharmacal Company
87. W. C. Scott and Company
93. Producers Creamery Company



# Special Events

## For All Physicians

- Round Table Luncheon—Tuesday, May 5, 12:00  
Forum, Rose Room
- Round Table Luncheon—Wednesday, May 6, 12:00  
Forum, Rose Room
- Annual Banquet—Wednesday, May 6, 7:00  
Broadview Hotel, Ballroom

## For Groups

### BLUE SHIELD

- Blue Shield Physicians Relations Committee Breakfast—Tuesday, May 5, 8:00  
Allis Hotel, West Room

### COUNCIL

- First Meeting of New Council—Thursday, May 7, following House of Delegates Meeting  
Allis Hotel, Ballroom

### DERMATOLOGISTS

- Kansas Society of Dermatologists Breakfast and Meeting—Thursday, May 7, 8:00  
Lassen Hotel, Wheat Shockers Room

### E.E.N.T.

- Kansas E.E.N.T. Society Business Meeting—Tuesday, May 5, following E.E.N.T. Scientific Session  
Forum, E.E.N.T. Room

### GENERAL PRACTITIONERS

- Kansas Academy of General Practice—Monday, May 4, All through Day  
Broadview Hotel

### HOUSE OF DELEGATES

- First Meeting of House of Delegates, Dinner—Tuesday, May 5, 6:00  
Allis Hotel, Ballroom
- Second Meeting of House of Delegates, Luncheon—Thursday, May 7, 1:00  
Allis Hotel, Ballroom

### KANSAS PHYSICIANS SERVICE

- Annual Meeting, Board of Directors, Kansas Physicians Service, Luncheon—Sunday, May 3, 12:30  
Allis Hotel, East Room

### MEDICAL VETERANS

- Medical Veterans Society Breakfast and Meeting (All Veterans Invited)—Wednesday, May 6, 8:00  
Broadview Hotel, English Room

### OBSTETRICIANS

- Kansas State Obstetrical Society Dinner and Meeting—Tuesday, May 5, 6:30  
Broadview Hotel, English Room

### ORTHOPEDISTS

- Kansas Society of Orthopedists Business Meeting—Wednesday, May 6, 3:00  
Home of H. O. Anderson, M.D., 1501 Fairmount

### PATHOLOGISTS

- Kansas Society of Pathologists Dinner and Meeting—Tuesday, May 5, 6:30  
Lassen Hotel, Frontier Room

### RADIOLOGISTS

- Kansas Radiological Society Breakfast and Meeting—Wednesday, May 6, 8:00  
Broadview Hotel, English Room

### VOCATIONAL REHABILITATION

- Vocational Rehabilitation Service, Professional Advisory Committee Breakfast and Meeting—Wednesday, May 6, 7:45  
Allis Hotel, West Room

## PRESIDENT'S PAGE

Dear Doctor:

We were much interested in the action of the House of Delegates of the A.M.A. in unanimously approving the recommendation of the Board of Trustees in regard to the President's Reorganization Plan Number 1. Approximately 200 delegates were present, called into session for the sole purpose of considering the recommendation. It was apparent, if one listened attentively in the halls, that there was some opposition to the adoption of the recommendation and to the methods used to secure such approval.

The delegates were called from all sections of the United States, at a considerable expenditure of time, effort, and money, to exercise their democratic privileges. What happened? As we saw it, the conditioning process got under way with speeches upon the business of the meeting by the speaker of the house and the president of the A.M.A. Then there was an interruption for an address by the President of the United States, an address which was to the point and well received. He was followed by Senator Taft, Dr. Judd (representative from Minnesota), Dr. Murray, and Dr. Henderson, all of whom did a fine job of selling the plan.

All of this occurred before the plan was considered by the delegates and before there was opportunity for a motion and a proper second. Where was Roberts' Rules of Order and where was Emily Post? We have always thought it common courtesy to have a motion and a proper second before a matter is opened for discussion. In this case the discussion—what there was—preceded the motion and the second and consisted of a well organized selling job. Rubber stamp approval was about all that was left. This was aided by the spontaneous appearance of mimeographed copies of the resolution, and the job was quickly finished.

As members of the A.M.A. we have been beating our breasts and loudly shouting our insistence of the value and fairness of the democratic process as the answer to socialized medicine and the threat of Communism in this country. May we quietly ask, "What democratic process?"

A handwritten signature in dark ink, appearing to read "Warren H. Brewster". The signature is fluid and cursive, with a large, stylized initial "W" and "B".



## President

Warren F. Bernstorf, M.D., completes his year as president in memorable fashion. Beset throughout his term of office with an unusual number of problems, he has safely and wisely guided this Society to its present position. It is impossible to recount all these events, so only a minimum number will be reported.

The first half year was occupied in a superlative effort to enlist medical interest in preservation of democracy. This battle against the encroachment of socialism awakened popular interest to where a new philosophy is now pervading our national leaders. It is because of the effort of your president in these things that he has been privileged to visit several times with the President of the United States, an honor and a recognition that probably never before has been afforded this Society.

The second half of Dr. Bernstorf's term was occupied with directing the interests of the medical profession through the 1953 Kansas legislature, acknowledged to have been the most unpredictable session within memory. Even with these herculean tasks, Dr. Bernstorf found time to attend committee meetings, dedicate hospitals, attend meetings of county societies, and care for the innumerable routine duties required by his office.

This has been a notable year which shall always stand high in the history of the Kansas Medical Society. Dr. Bernstorf's efforts have been richly rewarded in the successes he has achieved. For this the Society is grateful, but perhaps it will be his absolute faith in the virtue of a conviction, and his superlative concept, as well as his example of the meaning of good citizenship, that will remain uppermost in the memory of the persons with whom he worked this year. His influence in this direction could well transcend all else to become the crowning achievement of them all.



WARREN F. BERNSTORF, M.D., *President*

## President-Elect

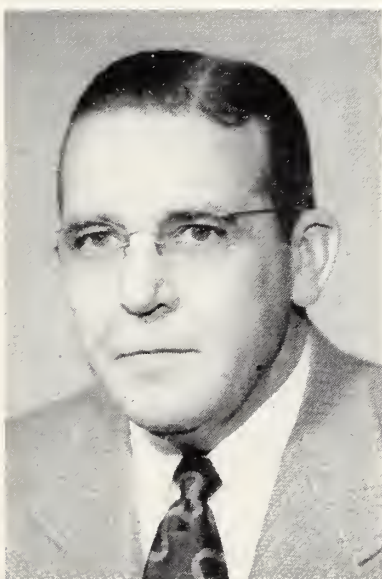
The coming year will take this Society actively into new fields. Some have been previously explored and others wholly untried. Among them can be cited positive public relations effort, a modernized indigent health care program, and renewed co-operation with certain federal agencies.

Under the direction of L. R. Pyle, M.D., Topeka, the Society will progress in many ways. He has qualities of leadership which are so immediately apparent to all who know him that words fail to add a single measure to his stature. His calm self assurance will protect this Society against hasty or ill-advised actions. His thoughtful deliberation will assure the profession that details will be carefully attended to. His absolutely uncompromising integrity, his unfaltering courage will bring not only confidence but will command the respect of all with whom he has occasion to visit during the coming year.

At a time of new adventure, when programs of far reaching influence are contemplated, leadership of this kind is most important. So, viewing the year ahead, it is assured that Dr. Pyle will take his profession and his Society a long progressive stride toward the fulfillment of the ideals by which he lives.

Dr. Pyle has established his qualifications to direct this Society through many notable achievements in the past, among which should be recalled his work as editor of the *Journal* and as chairman of the

explosive Voluntary Advisory Committee. Not only is he among the younger of those who have become president but he is the first veteran of World War II to have achieved this honor. The Society will support Dr. Pyle and, under his direction, will become stronger and of greater service than before.



LUCIEN R. PYLE, M.D., *President-Elect*

# Committees for 1953-1954

*Believing that early appointment of committees will facilitate the work of the groups, Dr. Lucien R. Pyle, who will take office as president of the Kansas Medical Society next month, is now announcing the committee roster for the 1953-1954 year.*

*Most of the chairmen, named first in the lists below, have been notified of their appointment and have accepted the responsibility of serving. Other members have not been advised of their selection. Names are listed alphabetically.*

## ALLIED GROUPS

G. E. Kassebaum, El Dorado, Chr.; C. H. Benage, Pittsburg; P. S. Combs, Leavenworth; D. R. Davis, Olathe; R. D. Dickson, Topeka; A. C. Dingus, Yates Center; E. E. Henderson, Columbus; Harry Lutz, Augusta; R. R. Snook, McLouth.

## ANESTHESIOLOGY

E. M. Sutton, Salina, Chr.; L. L. Bresette, Kansas City; H. J. Brown, Winfield; P. H. Lorhan, Kansas City; R. S. McKee, Leavenworth; C. D. McKeown, Wichita; R. T. Parmley, Wichita; F. C. Taggart, Topeka.

## AUXILIARY

I. J. Waxse, Oswego, Chr.; L. J. Schaefer, Salina, Vice Chr.; F. T. Collins, Topeka; C. O. West, Kansas City.

## BLUE SHIELD FEE SCHEDULE

N. L. Francis, Wichita, Chr., ENT; H. O. Anderson, Wichita, Orthopedics; C. M. Barnes, Seneca, General Practice; W. L. Beller, Topeka, Radiology; P. D. Brown, Salina, Obstetrics and Gynecology; G. F. Gsell, Wichita, Eye; A. G. Isaac, Newton, Urology; W. O. Martin, Topeka, Anesthesiology; E. J. Ryan, Emporia, Internal Medicine; L. L. Saylor, Topeka, Surgery; B. E. Stofer, Wichita, Pathology; G. G. Whitley, Douglass, Blue Shield.

## BLUE SHIELD RELATIONS

L. F. Glaser, Hutchinson, Chr.; J. O. Austin, Garden City; E. S. Brinton, Wichita; O. R. Cram, Larned; A. J. Horejsi, Ellsworth; C. S. Joss, Topeka; M. D. McComas, Jr., Concordia; D. E. McCoy, Oberlin; G. E. Manahan, Lawrence; C. E. Stevenson, Neodesha; O. H. True, Hays; E. T. Wulff, Atchison.

## CHILD WELFARE

W. H. Crouch, Topeka, Chr.; M. S. Boyden, Lawrence; D. R. Davis, Emporia; H. P. Jubelt, Manhattan; G. M. Martin, Topeka; F. L. Menahan, Wichita; H. C. Miller, Kansas City; E. G. Padfield, Salina; L. N. Speer, Kansas City.

## CONSERVATION OF EYESIGHT

D. O. Howard, Wichita, Chr.; B. J. Ashley,

Topeka; F. N. Bosilevac, Kansas City; H. L. Bryant, Coffeyville; L. L. Calkins, Kansas City; R. E. Cheney, Salina; D. T. Loy, Great Bend; H. E. Morgan, Newton; W. M. Scales, Hutchinson; D. P. Trimble, Emporia.

## CONSERVATION OF HEARING AND SPEECH

LaVerne B. Spake, Kansas City, Chr.; C. W. Armstrong, Salina; E. L. Gann, Emporia; Lucien Gray, Wichita; J. A. Johnson, El Dorado; C. R. Kempthorne, Manhattan; W. D. Pittman, Pratt; G. O. Proud, Kansas City; M. J. Rucker, Sabetha; M. J. Ryan, Kansas City.

## CONSTITUTION AND RULES

A. W. Fegtly, Wichita, Chr.; H. E. Haskins, Kingman; V. H. Hildyard, Baldwin; M. O. Steffen, Great Bend; C. E. Vestle, Humboldt.

## CONTROL OF CANCER

R. E. Speirs, Dodge City, Chr.; T. P. Butcher, Emporia; A. M. Cherner, Hays; A. A. Fink, Topeka; H. L. Hiebert, Topeka; W. J. Kiser, Wichita; A. F. Prochazka, Liberal; R. H. Riedel, Topeka; N. P. Sherwood, Lawrence; C. D. Snyder, Winfield; R. E. Stowell, Kansas City; J. F. Thurlow, Hays; G. M. Tice, Kansas City; L. E. Vin Zant, Wichita; K. E. Voldeng, Wellington; H. M. Wiley, Garden City.

## CONTROL OF TUBERCULOSIS

A. L. Ashmore, Wichita, Chr.; Andre Baude, Topeka; F. E. Bishop, Atwood; H. L. Bogan, Baxter Springs; R. I. Canuteson, Lawrence; W. G. Rinehart, Pittsburg; C. F. Taylor, Norton; F. A. Trump, Ottawa; C. J. W. Wilen, Manhattan.

## EMERGENCY MEDICAL CARE

D. P. Trees, Wichita, Chr.; W. H. Algie, Kansas City; W. A. Grosjean, Winfield; G. W. Hammel, El Dorado; P. B. Leffler, Pittsburg; J. W. Manley, Kansas City; J. M. Mott, Topeka; W. A. Smiley, Jr., Junction City; Nathaniel Uhr, Topeka.

## ENDOWMENT

J. W. Randell, Marysville, Chr.; G. H. Jackman, Cimarron; F. D. Murphy, Lawrence; E. H. Terrill, Wichita.



## EXPERT TESTIMONY

C. E. Joss, Topeka, Chr.; E. J. Frost, Wichita; J. L. Lattimore, Topeka; C. D. McKeown, Wichita.

## HISTORY

R. R. Melton, Marion, Chr.; A. C. Gulick, Goodland; H. E. Haskins, Kingman; C. S. Huffman, Columbus; Alfred O'Donnell, Ellsworth; O. D. Walker, Salina.

## HOSPITAL SURVEY

A. C. Armitage, Hutchinson, Chr.; P. L. Beiderwell, Belleville; A. P. Cloyes, El Dorado; E. R. Gelvin, Concordia; L. C. Hays, Cedarvale; J. L. Jensen, Colby; A. L. Nichols, Hiawatha; P. A. Pettitt, Paola; A. J. Rettenmaier, Kansas City; Joe Seitz, Jr., Wakeeney; F. C. Shepard, Clay Center.

## INDUSTRIAL MEDICINE

M. A. Walker, Kansas City, Chr.; J. W. Cavanaugh, Topeka; J. A. Grove, Newton; C. W. Hall, Hutchinson; H. R. Hodson, Wichita; E. S. Miller, Kansas City; H. L. Regier, Kansas City; R. W. Urie, Parsons.

## MATERNAL WELFARE

David E. Gray, Topeka, Chr.; D. A. Anderson, Salina; R. M. Carr, Junction City; L. E. Filkin, Concordia; H. M. Floersch, Kansas City; H. M. Foster, Hays; R. G. Heasty, Manhattan; R. T. Hermes, Lawrence; G. M. Martin, Topeka; Robert L. Newman, Kansas City; C. D. Schrader, Newton; Robert Sohlberg, Jr., McPherson.

## MEDICAL ASSISTANTS

H. J. Davis, Topeka, Chr.; J. J. Basham, Eureka; O. W. Davidson, Kansas City; A. E. Hiebert, Wichita; Howard Kennedy, Topeka.

## MEDICAL ECONOMICS

B. A. Nelson, Manhattan, Chr.; J. N. Blank, Hutchinson; R. L. Gench, Fort Scott; E. J. Grosdidier, Kansas City; D. H. Macrae, Topeka; G. E. Milbank, Wichita; M. B. Miller, Topeka; F. A. Moorhead, Neodesha; L. S. Nelson, Jr., Salina; R. Solhberg, Jr., McPherson.

## MEDICAL SCHOOLS

G. G. Whitley, Douglass, Chr.; J. O. Austin, Garden City; Ralph Ball, Manhattan; R. M. Carr, Junction City; W. J. Feehan, Kansas City; A. C. Hatcher, Wellington; V. H. Hildyard, Baldwin; R. H. Maxwell, Wichita; R. C. Polson, Great Bend; R. E. White, Garnett.

## MENTAL HEALTH

D. B. Foster, Topeka, Chr.; A. J. Adams, Wichita;

H. V. Baer, Parsons; R. L. Drake, Wichita; T. L. Foster, Halstead; Mary Glassen, Phillipsburg; E. D. Greenwood, Topeka; L. W. Hatton, Salina; C. C. Hawke, Winfield; George Jackson, Topeka; W. F. Roth, Jr., Kansas City; D. R. Wall, Wichita; M. E. Wright, Lawrence.

## NECROLOGY

J. F. Gsell, Wichita, Chr.; L. J. Brethour, Junction City; F. D. Lose, Madison; Alfred O'Donnell, Ellsworth; M. O. Steffen, Great Bend; A. E. Titus, Cottonwood Falls.

## POSTGRADUATE STUDY

H. H. Jones, Winfield, Chr.; W. H. Algie, Kansas City; M. H. Delp, Kansas City; H. L. Hiebert, Topeka; E. L. Mills, Wichita; H. P. Palmer, Scott City; Maurice Snyder, Salina.

## PUBLIC HEALTH AND EDUCATION

C. W. Miller, Wichita, Chr.; L. G. Heins, Abilene; Robert O'Neill, Topeka; A. J. Rettenmaier, Kansas City; L. F. Schmaus, Iola; C. O. Stensaas, Arkansas City.

## PUBLIC POLICY

J. L. Lattimore, Topeka, Chr.; all past presidents of the Kansas Medical Society.

## RURAL HEALTH

J. G. Claypool, Howard, Chr.; C. M. Barnes, Seneca; P. L. Beiderwell, Belleville; J. R. Bradley, Greensburg; V. E. Brown, Sabetha; C. S. Fleckenstein, Onaga; E. T. Gertson, Atwood; K. R. Hunter, Lebo; J. J. Marchbanks, Oakley; John Neuenschwander, Hoxie; H. S. O'Donnell, Ellsworth; E. F. Steichen, Lenora; R. P. Stoffer, Halstead; H. J. Williams, Osage City.

## STORMONT MEDICAL LIBRARY

John Crary, Topeka, Chr.; G. F. Corrigan, Wichita; Rodger Moon, Prairie Village; A. K. Owen, Topeka; W. L. Valk, Kansas City.

## STUDY OF HEART DISEASE

P. W. Morgan, Emporia, Chr.; D. R. Bedford, Topeka; P. M. Clark, Independence; C. W. Erickson, Pittsburg; L. H. Leger, Kansas City; G. L. Norris, Winfield; L. O. E. Peckenschneider, Halstead; E. J. Teeter, Goodland; D. C. Wakeman, Topeka.

## VENEREAL DISEASE

G. S. Voorhees, Leavenworth, Chr.; M. L. Bauman, Wichita; J. K. L. Choy, Topeka; H. E. Neptune, Salina; V. M. Winkle, Topeka.



# Councilor Reports

## FIRST DISTRICT

### *To the House of Delegates:*

The past year has been a year of definite progress for the First District. Our few minor problems have been readily and satisfactorily solved without much undue publicity. Our members seem to be earnestly and quietly engaged in bringing a better class of medicine to the people of Northeast Kansas.

Our hospitals have been filled to capacity but have done a very nice job of taking care of those requiring hospitalization, in spite of a generalized shortage of registered nurses. Plans are pretty well completed for a much needed hospital at Winchester to serve the surrounding area of Jefferson, Leavenworth, and Atchison counties. Construction is to be started soon.

Most of our medium sized towns which have been without doctors have secured one in the past year. These have been without exception capable, energetic young doctors who are giving the Kansas Plan to the people of Kansas. They are finding Kansas a desirable place to practice medicine.

Our component societies are active and, with few exceptions, hold regular scientific meetings.

Respectfully submitted,

W. L. ANDERSON, M.D., *Councilor*

## SECOND DISTRICT

### *To the House of Delegates:*

In the Second District all has been quiet during the past year, and there have been no radical changes in medical affairs. Physicians in Linn County have not seen fit to join the medical society.

Although some of our members have been called into service, the situation with regard to the supply of physicians in this area is not bad.

Respectfully submitted,

H. PENFIELD JONES, M.D., *Councilor*

## THIRD DISTRICT

### *To the House of Delegates:*

The serenity manifested by the members of the Third District causes its councilor to be of the opinion that Osler's "Aequanimitas" lies under their pillows.

The interest of our younger doctors in postgraduate study and refresher courses is most commendable; however, the councilor regrets that more younger men do not avail themselves of the democratic function of our Society to be more conversant with its problems and contribute an interest that would be advantageous

to the Society as well as to the individual physician.

Respectfully submitted,

JAMES G. HUGHBANKS, M.D., *Councilor*

## FOURTH DISTRICT

### *To the House of Delegates:*

The past year has been a good one for organized medicine in this district. The total number of physicians has increased. Several of our members who have served their allotted time in the armed services have returned to their practices. We have lost some of our physicians during the past year to the Army, Navy, and Air Force. Growth of military installations in this district has been considerable, and this has added more physicians to the area.

A check of the meetings held by the county societies and other medical groups within the district shows most of them to have been of high caliber. Attendance at meetings has been only fair. The Fourth District is close to the University of Kansas Medical Center, where excellent postgraduate instruction is always available. It is hoped that more physicians in our area will take advantage of this fine training this year.

Respectfully submitted,

FLOYD C. TAGGART, M.D., *Councilor*

## FIFTH DISTRICT

### *To the House of Delegates:*

The constituency of my district is becoming more interested in political and legislative matters concerning the affairs connected with the medical profession, and it is well that it is so for our opponents are very active in matters concerning things medical.

The Woman's Auxiliary to the Kansas Medical Society is making an effort to help the nurse situation in this district by a program of trying to get high school graduates interested.

Blue Cross and Blue Shield protection is being accepted more and more as the laity becomes acquainted with the possibilities of help in care of sickness.

The program of the care of the indigent seems satisfactory in most of my district.

Respectfully submitted,

L. J. BEYER, M.D., *Councilor*

## SIXTH DISTRICT

### *To the House of Delegates:*

There have been no great problems arising in the Sixth District this past year.

A general interest of the medical profession, corresponding to the public interest in the national elections, was evidenced from the record vote and awareness of the desire for a change in administration of our government.

Councilor visits have been made to Butler, Cowley, Harper, Sumner, and Sedgwick Counties with much time being spent on the public relations aspect of the practice of medicine.

An awareness of the need for a tuberculosis sanatorium in this area has been emphasized by the work of the southeastern counties, who have made a complete survey of their needs and are obtaining excellent support from the legislature.

Sedgwick County is planning an excellent meeting for the state society and is enlisting the help of the membership from over the entire state.

Respectfully submitted,

CLYDE W. MILLER, M.D., *Councilor*

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#### SEVENTH DISTRICT

*To the House of Delegates:*

Your councilor from the Seventh District has been somewhat lax the past year in visiting the societies in this district; however, contact with members of the component societies at various medical functions has led one to believe that the district as a whole continues to function with no more than the usual minor complaints and petty grievances.

At present there has been no further attempt at consolidation of some of the societies as previously considered.

We regret that the political minded members from this district were unable to do anything to prevent the turmoil in the state legislature that seemed to originate largely with our representatives.

It seems probable that the military situation may somewhat seriously interfere with medical coverage of at least part of this district in the near future, but possibly this can be absorbed by adjacent facilities.

Respectfully submitted,

S. A. ANDERSON, M.D., *Councilor*

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#### EIGHTH DISTRICT

*To the House of Delegates:*

There is a good political atmosphere in the district as a result of the November election. Most everyone is well satisfied with the outcome. The medical profession did its part well during the campaign.

A number of new doctors have located in the district in the last year. Also, the hospital facilities have been expanded in several places, and a new hospital was opened at Lincoln. Salina is happy to report that

it now has a pathologist serving its two hospitals.

There have been no unusual problems in the district in the last year.

Respectfully submitted,

ANDREW E. RUEB, M.D., *Councilor*

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#### NINTH DISTRICT

*To the House of Delegates:*

The Ninth District, made up of 10 counties in northwest Kansas, comprises the Northwest Kansas Medical Society. Due to the small number of physicians in each county, there are no local county societies.

This has been a year of fine equilibrium so far as supply and demand is concerned with patients, physicians, and hospital facilities.

Medical meetings have been held during the year for the transaction of necessary business. Programs held in former years have been mostly replaced by the educational circuit course sponsored by the University of Kansas School of Medicine and the Kansas Medical Society. The high quality of the programs and the fine men who have presented them will always remain an outstanding event in Kansas medical history. We owe a debt of gratitude to those who have made this educational program possible.

Your councilor is happy to welcome and report the following physicians who have established practice in this district during the last year: Dr. J. T. Swanson, Colby; Dr. John R. Neuenschwander, Hoxie; Dr. Donald L. Marchbanks, Hill City; Dr. Athello D. Smith, Hill City, and Dr. William J. Madden, Goodland. Dr. Donald R. Wilson and Dr. Arnold M. Pederson, new members of the Society, are employed at the sanatorium, Norton. Lt. Col. McDougal, after 17 months in the Army, one year of which was spent in Korea, resumed his practice in Colby last October.

The hardihood of western Kansas again reveals itself in no deaths among the physicians of the Ninth District during the past year.

It would seem medical service is good with adequate physicians except for one locality. However, many physicians of the older age group have been called for their induction examinations in the armed forces. Should many be taken from the Ninth District, the communities will feel the shortage of medical care.

Respectfully submitted,

M. J. RENNER, M.D., *Councilor*

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#### TENTH DISTRICT

*To the House of Delegates:*

The Tenth District has been getting along very

well this past year. Practically all of those eligible for membership in the Society are active members. The Tenth District meets as the Central Kansas Medical Society, and we have had four quarterly meetings at which times scientific programs have been given. Attendance has been excellent.

We have lost five members to the armed services in the last year. At present we have been unable to replace these men. There are several others in the district who will probably be called to the service in the next year. Unless we can secure replacements, we are going to be very short of physicians for the coming year.

Respectfully submitted,  
L. W. REYNOLDS, M.D., *Councilor*

#### ELEVENTH DISTRICT

*To the House of Delegates:*

There has been very little medical activity in this district this year. The military services have called so many doctors from this district that the ratio of patients per doctor is back to World War II levels. For this reason, regular medical meetings have not

been held, and from rumors it appears the situation will grow worse.

Respectfully submitted,  
CYRIL V. BLACK, M.D., *Councilor*

#### TWELFTH DISTRICT

*To the House of Delegates:*

Medical societies in the Twelfth District still function under the handicap of wide gaps in distance between members. Societies in Seward, Finney, and Ford counties serve the entire 17-county district.

The Kansas University Medical Postgraduate Extension Courses held every month for six meetings in Garden City are well attended and provide an opportunity for occasional gatherings of most of the doctors in the district.

Several men have been called into the military service during the past year, but most of them have been replaced by new doctors.

The medical situation in the district has changed little from the past year.

Respectfully submitted,  
R. G. KLEIN, M.D., *Councilor*

## Delegate to the A.M.A.

*To the House of Delegates:*

A special meeting of the House of Delegates of the American Medical Association was held in Washington, D. C., on March 14. One hundred seventy-nine of the possible 183 delegates were present. Your Kansas delegate to that meeting herewith reports the action taken.

Most important was the delegates' unanimous approval of the Board of Trustees' report on the President's Reorganization Plan Number 1 of 1953, printed below in its entirety.

#### REPORT OF BOARD OF TRUSTEES

The House of Delegates of the American Medical Association has for nearly 80 years been on record as favoring an independent Department of Health in the federal government. The reason for this stand has been that the House has felt that health and medicine should be given a status commensurate with their dignity and importance in the lives of the American people, and that they should be completely divorced from any political considerations.

The Board of Trustees, after a careful study of the policy of the American Medical Association with respect to the administration of health activities in the Executive Branch of the government and after study-

ing the Reorganization Plan for elevation of the Federal Security Agency to cabinet status submitted by President Eisenhower to the Congress, finds that Reorganization Plan Number 1 of 1953 provides for a special assistant to the Secretary for Health and Medical Affairs. This provision is a step in the right direction which should result in centralized coordination under a leader in the medical field of the health activities of the proposed department. Health, therefore, is given a special position. The proposed plan, properly administered, will permit more effective coordination and administration of the health activities of the new Department without interference or control by other branches.

Previous attempts to raise the Federal Security Agency from an independent agency to the level of an Executive Department have been opposed by the Association because the plan did not meet these aims.

Inasmuch as federal health benefits and programs are established by the Congress, an administration bent on achieving the nationalization of medicine cannot reach that goal except with the support of Congress. Therefore, an organizational plan through which federal health activities are administered, although important, is not nearly so vital an issue as



the policies adopted by the Congress of the United States.

The Board of Trustees recommends that the House of Delegates reaffirm its stand in favor of an independent Department of Health but that it support the Reorganization Plan Number 1 of 1953 as being a step in the right direction; that the American Medical Association cooperate in making the plan successful and that it watch its development with great care and interest.

It should be understood, however, that the Association reserves the right to make recommendations for amendment of the then existing law or to press for the establishment of an independent Department of Health, if the present plan does not, after a sufficient length of time for development, result in proper advancement in and protection of health and medical science and in their freedom from political control.

#### PROVISIONS OF REORGANIZATION PLAN NUMBER 1

The three paragraphs immediately following outline the important provisions of Reorganization Plan Number 1:

Section 1. *Creation of Department: Secretary.* There is hereby established an executive department, which shall be known as the Department of Health, Education, and Welfare (hereafter in this reorganization plan referred to as the Department). There shall be at the head of the Department a Secretary of Health, Education, and Welfare (hereafter in this reorganization plan referred to as the Secretary), who shall be appointed by the President by and with the advice and consent of the Senate, and who shall receive compensation at the rate now or hereafter prescribed by law for the heads of executive departments. The Department shall be administered under the supervision and direction of the Secretary.

Section 3. *Special Assistant.* There shall be in the Department a Special Assistant to the Secretary (Health and Medical Affairs) who shall be appointed by the President by and with the advice and consent of the Senate from among persons who are recognized leaders in the medical field with wide non-governmental experience, shall review the health and medical programs of the Department and advise the Secretary with respect to the improvement of such programs and with respect to necessary legislation in the

health and medical fields, and shall receive compensation at the rate now or hereafter provided by law for assistant secretaries of executive departments.

Section 8. *Abolitions.* The Federal Security Agency (exclusive of the agencies thereof transferred by section 5 of this reorganization plan), the offices of Federal Security Administrator and Assistant Federal Security Administrator created by Reorganization Plan Number 1 (53 Stat. 1423), the two offices of assistant heads of the Federal Security Agency created by Reorganization Plan No. 2 of 1946 (60 Stat. 1095), and the office of Commissioner for Social Security created by section 701 of the Social Security Act, as amended (64 Stat. 558), are hereby abolished. The Secretary shall make such provisions as may be necessary in order to wind up any outstanding affairs of the Agency and offices abolished by this section which are not otherwise provided for in this reorganization plan.

#### PRESIDENT EISENHOWER SPEAKS

President Dwight D. Eisenhower addressed the delegates and outlined his philosophy of government. He advocates decentralization of government and asks states and municipalities to carry forward all social plans as far as possible, with the federal government stepping in with assistance in areas in which it has a real place, as decided by a commission.

Senator Robert A. Taft also spoke. He believes that old age assistance might be administered more equitably if it were dispensed through a separate federal agency. Congressman Walter H. Judd discussed the entrenchment of bureaucrats in Washington.

#### YOUR DELEGATE'S IMPRESSIONS

The House of Delegates is confident that the person selected to head the medical program will be a man of wide non-governmental experience, and that this is a step in the right direction, even though there will be no separate Department of Health.

The Board of Trustees of the A.M.A. has met with Mrs. Oveta Culp Hobby, who will be the secretary of the new department. They believe that she will be receptive to information and advice from organized medicine in the United States.

Respectfully submitted,

L. S. NELSON, M.D., *Delegate to the A.M.A.*

## Kansas Blue Shield

*To the House of Delegates:*

Blue Shield, in its seventh year of operation in Kansas, continued to make excellent progress during the past year. The membership in Blue Shield in-

creased from 264,885 at the end of 1951 to 299,106 at the end of 1952. This was a net gain of 31,219 members, and a gain of approximately 11 per cent in membership. Our list of participating physicians

continues to grow, and at present there are 1,723 Kansas doctors in the plan.

The financial position of Blue Shield is most encouraging in that it reflects a stabilized position in the cost and use of services. Blue Shield showed a net gain in reserve of \$261,064.54 during 1952. The reserve is considered to be at a satisfactory level.

Blue Shield has strengthened its relations with physicians through the work of the Blue Shield Relations Committee of the Kansas Medical Society. The report of this committee is elsewhere in this issue.

One change in the benefits of Blue Shield was acted upon by the Blue Shield Board during the past year, viz., the inclusion of Blue Shield payments for isotope therapy through the use of radioactive iodine in the treatment of thyrotoxicosis and cancer of the thyroid. Since this new treatment is considered as an alternative treatment for services Blue Shield already covers, the Blue Shield Board felt it could be offered within the framework of our present membership dues. It is an indication that Blue Shield is willing to recognize new forms of treatment as soon as they are accepted by the medical profession, whenever it is financially possible to do so.

During the preceding year Blue Shield met with the Fee Committee of the Kansas Medical Society and

is co-operating with this committee in a study of average charges made throughout the state. The results of this new fee survey have not been completed, and a report will be made on its results by the Fee Committee under the chairmanship of Dr. A. A. Fink.

Blue Shield has continued to emphasize the need for a widespread economy program through the co-operation of Kansas physicians in an attempt to reduce the utilization of Blue Cross services. Blue Shield acceptance by the public is geared very closely to the acceptance of Blue Cross, and any rise in the cost of Blue Cross services would have a detrimental effect in offering Blue Shield to the public. It is most urgent that Blue Shield participating physicians help eliminate all waste in the use of Blue Cross and Blue Shield services.

Nationally, Blue Shield has made exceptional progress. A recent report from Chicago indicated enrollment of the twenty-five millionth Blue Shield member. The position of the plan here in Kansas corresponds favorably with the level of enrollment nationally in that over 20 per cent of the eligible population in Kansas is enrolled in the plan.

Respectfully submitted,

HENRY S. BLAKE, M.D., *President*

## Committee Reports

### ALLIED GROUPS

G. E. Kassebaum, Chr., El Dorado; James J. Basham, Eureka; A. R. Chambers, Iola; R. D. Dickson, Topeka; L. B. Gloyne, Kansas City; P. B. Leffler, Pittsburg; Harry Lutz, Augusta; G. C. Meek, Arkansas City; R. R. Snook, McLouth; W. L. Speer, Osawatimie; F. E. Wrightman, Sabetha.

*To the House of Delegates:*

The work of the Committee on Allied Groups was practically eliminated when the Interprofessional Advisory Council was set up. If that group functions, there is little reason for this committee to exist.

I have polled each member of the committee for suggestions. Since they had none, no meeting was held.

Respectfully submitted,

G. E. KASSEBAUM, M.D., *Chairman*

### ANESTHESIOLOGY

E. M. Sutton, Chr., Salina; L. L. Bresette, Kansas City; H. H. Hyndman, Wichita; P. H. Lorhan, Kansas City; R. S. McKee, Leavenworth; C. D. McKeown, Wichita; R. T. Parmley, Wichita; H. F. Spencer, Emporia; F. C. Taggart, Topeka; M. M. Tinterow, Wichita.

*To the House of Delegates:*

It became necessary, well into the past year, to make a change in the personnel of this committee. This delay resulted in the committee not having any

meetings. Consequently, there is no report to make.

Respectfully submitted,

E. M. SUTTON, M.D., *Chairman*

### AUXILIARY

C. T. Ralls, Chr., Winfield; J. A. Billingsley, Kansas City; M. A. Brawley, Frankfort; E. C. Bryan, Erie; J. E. Henshall, Osborne; F. A. Moorhead, Neodesha; R. E. Pfuete, Topeka; L. J. Schaefer, Salina; I. J. Waxse, Oswego; C. O. West, Kansas City.

*To the House of Delegates:*

The Committee on Auxiliary of the Kansas Medical Society urges each member of the Society to encourage his wife to join and become active in the Woman's Auxiliary. We are asking your continued support and co-operation in the work the Auxiliary is so ably carrying on in nurse recruitment, public relations, and the support of *Today's Health* committee recommendations.

Respectfully submitted,

C. T. RALLS, M.D., *Chairman*

### BLUE SHIELD FEE SCHEDULE

A. A. Fink, Chr., Pathology, Topeka; C. M. Barnes, General Practice, Seneca; W. L. Beller, Radiology, Topeka; P. D. Brown, Obstetrics and Gynecology, Salina; N. L. Francis, E.N.T., Wichita; G. F. Gsell, Eye, Wichita; A. G. Isaac, Urology, Newton; Dwight Lawson, Blue Shield, Topeka; W. O. Martin, Anesthesi-



ology, Topeka; C. R. Rombold, Orthopedics, Wichita; E. J. Ryan, Internal Medicine, Emporia; L. L. Saylor, Surgery, Topeka.

### *To the House of Delegates:*

During the past year a questionnaire was sent to all members of the Kansas Medical Society to ascertain their feeling toward Blue Shield coverage of home illnesses. The response was excellent. The matter was discussed at a meeting of the committee held on February 8, 1953, and it was felt that Blue Shield could not add home coverage of illnesses at present for the following reasons:

1. The cost would be uncertain.
2. It would cause a tremendous increase in usage.
3. Inclusion of home coverage would open the way for inclusion of coverage for office calls, which would be too costly to be salable.
4. It would create a difficulty in assessing mileage costs.

Following this, so that a comparison with the present fees could be made on a more unbiased basis, a questionnaire was sent to the membership of the Society asking for information as to actual average charges in a number of given procedures, chosen for their general representation of fee charges. To give the study a practical approach, the doctors filling out the forms were requested to state approximately how many times they did the procedure listed. This information will give the committee an opportunity to judge the authenticity of the figures stated. So far, approximately 300 questionnaires have been returned. A reminder requesting additional replies was sent early in March. Information from all returns will be summarized and presented to the House of Delegates at its May 5 meeting as a supplemental report.

Respectfully submitted,

A. A. FINK, M.D., *Chairman*

### BLUE SHIELD RELATIONS

L. F. Glaser, Chr., Hutchinson; J. O. Austin, Garden City; O. R. Cram, Larned; A. J. Horejsi, Ellsworth; M. D. McComas, Jr., Concordia; G. E. Manahan, Lawrence; L. K. Nix, Wichita; F. L. Smith, Jr., Colby; H. F. Spencer, Emporia; C. E. Stevenson, Neodesha; O. H. True, Hays; E. T. Wulff, Atchison.

### *To the House of Delegates:*

During the preceding year the Blue Shield Relations Committee held one state-wide meeting in Hutchinson. The committee was brought up to date on the over-all financial position of Blue Shield, the Blue Shield enrollment picture, and plans for district Blue Shield committee meetings. Since this meeting the Blue Shield staff has held six district meetings in various parts of the state, and plans have been made for meetings in the remaining six districts in the spring.

The Blue Shield financial position has apparently been stabilized for the past two years with appropriate additions to reserves being made. The committee

did not find any serious difficulties between Blue Shield and participating physicians, and in general it could be said that the relationship between Blue Shield and the medical profession in Kansas is on a sound basis.

The committee discussed the rising utilization of Blue Cross services and resolved to lend the Blue Cross and Blue Shield staff every assistance in bringing this higher utilization to the attention of the medical profession. The committee urges the Blue Shield participating physicians to co-operate fully in the Blue Shield and Blue Cross economy program in the interest of maintaining the present high level of Blue Cross and Blue Shield services without the necessity of rate increases.

In considering the possibility of rate increases, the Blue Shield Relations Committee went on record as urging both Blue Cross and Blue Shield to consider adjustments in benefits instead of increases in rates if either is necessary. It was the consensus of the committee that if Blue Shield found it necessary to increase rates, it would be desirable to present the matter for the consideration of the profession with a view toward doctors taking some pro rata reduction in payments rather than to increase rates. However, it should be repeated that the Blue Shield financial position does not at present seem to indicate the need for any such action.

It is the hope of the Blue Shield Relations Committee that the program of two-way communications between the doctors and Blue Shield will be expanded and improved from year to year. It is still the feeling of the committee that many doctors are not yet fully aware of the responsibility they have in furthering the aims of Blue Shield and in making the program more attractive to the general public. Only through the broad understanding of Blue Shield and how it serves the aims of the medical profession can further significant progress be made in development of the program.

Respectfully submitted,

LELAND F. GLASER, M.D., *Chairman*

### CHILD WELFARE

Mary S. Boyden, Chr., Lawrence; J. D. Beck, Topeka; D. R. Davis, Emporia; T. C. Hurst, Wichita; G. M. Martin, Topeka; D. N. Medearis, Kansas City; R. A. Nelson, Wichita; E. G. Padfield, Salina; Jack V. Sharp, Arkansas City.

### *To the House of Delegates:*

No meetings of this committee have been held. However, a problem has arisen which will necessitate action by the committee. This will be reported to the House of Delegates at the time of the annual session.

Respectfully submitted,

MARY S. BOYDEN, M.D., *Chairman*



## CONSERVATION OF EYESIGHT

D. O. Howard, Chr., Wichita; E. E. Anderson, Kansas City; B. J. Ashley, Topeka; H. L. Bryant, Coffeyville; R. E. Cheney, Salina; A. M. Dougherty, Dodge City; C. H. Fain, Pittsburg; Glen Floyd, Winfield; J. E. Hill, Arkansas City; H. L. Kirkpatrick, Topeka; D. T. Loy, Great Bend; H. E. Morgan, Newton; D. P. Trimble, Emporia; K. W. Stock, Topeka.

*To the House of Delegates:*

The Committee for Conservation of Eyesight has, as one of its principal activities, acted as an advisory group to the State Department of Social Welfare's Division of Care and Prevention of Blindness programs. Throughout the year various problems have required study and recommendations.

The committee has made recommendations for legislative action concerning sale of fireworks and the indiscriminate sale of BB guns.

The problem of visual checks of school children, in our opinion, requires a great deal more public education in order that parents may be enlightened as to purposes of the examination of school children, and also the limitations of screening methods.

Respectfully submitted,

D. O. HOWARD, M.D., *Chairman*

## CONSERVATION OF HEARING AND SPEECH

L. B. Spake, Chr., Kansas City; C. W. Armstrong, Salina; N. L. Francis, Wichita; J. A. Johnson, El Dorado; C. R. Kempthorne, Manhattan; E. E. Miller, Pittsburg; M. J. Rucker, Sabetha; G. E. Stone, Hutchinson; C. L. Woodhouse, Wichita.

*To the House of Delegates:*

The Committee on Conservation of Hearing and Speech has remained dormant for the past eight months, due primarily to lack of interest and co-operation by the medical profession. Many physicians do not realize that six per cent of our children in public and parochial schools have a hearing loss with a three per cent speech impairment. Then, we have six per cent more with a speech impairment alone.

We have no greater problem in our state from a percentage basis, since twelve per cent have a handicap. I believe that at our state meeting the problem should be brought before the Society as a whole for more extensive study and co-operation.

Respectfully submitted,

L. B. SPAKE, M.D., *Chairman*

## CONSTITUTION AND RULES

A. W. Feghtly, Chr., Wichita; W. M. Brewer, Hays; H. E. Haskins, Kingman; J. L. Jenson, Colby; M. O. Steffen, Great Bend.

*To the House of Delegates:*

After correspondence with the members of the committee, the executive secretary, and some members of the Council, we offer the following amendments, together with appropriate comments on each to outline reasons for their presentation.

1. *Resolved*, That Chapter XI, Section 1a of the

By-Laws on Pages 23 and 24 be amended by adding to the list of standing committees

"Past Presidents Advisory Committee, Sec. 35."

2. *Resolved*, That Chapter XI on Page 33 be amended by the addition of a new section, No. 35, to read as follows:

"35. The Past Presidents Advisory Committee shall be composed of *all living* Past Presidents. Meetings shall be held at a convenient time and place at the call of the Immediate Past President, and succeeding meetings as desired. The Chairman and Secretary are to be selected at the first meeting of each year.

"The purpose of the committee shall be mutual fellowship and means of free discussion of all pertinent matters affecting the ideals, aims, proficiency, and successful operation and work of the Kansas Medical Society. The advice and recommendations arising from these meetings and discussion, which have the benefit of experience in office, shall be communicated to the Council through the Immediate Past President who is their official representative upon that Council."

COMMENT: The idea of this committee and its functions and value have been derived from another state in which it has functioned for over 25 years. In that state the members of the committee have taken pride in their membership and have enjoyed the fellowship of meeting together. The advice arising from their meetings has been acceptable and valuable to the Council in carrying on the work of the state organization. It has been noted with regret that in the past it has been far too customary in our state, as well as others, for the ex-presidents to be relegated to the "has beens." It is believed that in this way a means is provided by which the benefit of experience and learned advice or suggestion which could profitably come from those formerly honored with the presidency, can be preserved for this Society.

3. *Resolved*, That Chapter VI, Election of Officers, Section 1 on Page 13 shall be amended and become effective on and after its adoption by the House of Delegates, by striking from the last two lines the clause "a list of two or more candidates for each elective office." In lieu thereof the following shall be inserted:

". . . a list of candidates for each elective office, consisting of one or more candidates for the offices of President-Elect, First Vice-President, Secretary, Treasurer, and Delegate-Elect to the American Medical Association, and TWO or MORE candidates for the offices of Second Vice-President and Alternate Delegate to the American Medical Association. Whenever possible or practical, the candidates for Treasurer should be named from residents of the city or vicinity of the location of the central office."

COMMENT: In the past few years this organization has seldom departed from the policy and practice

of succession or progression in office. This amendment would allow the Nominating Committee to use its discretion in considering the advisability of recommending by its nominations any desirable or possible exceptions to this time-honored custom. It also provides, by specifying TWO or MORE candidates for the last two offices mentioned, that the delegates have opportunity for considering and naming efficient and worthy members for succession to the higher offices. Please note, however, that Section 3 of the same chapter, which remains effective, states specifically that nominations for all offices may be made from the floor in addition to the recommendations of the Nominating Committee.

4. *Resolved*, That Chapter VIII, Section 13 of the By-Laws on Page 19 shall be amended by removing Barber County from the Eleventh District and placing it in the Sixth District.

COMMENT: Harper and Sumner Counties in the Sixth District and Barber County in the Eleventh District have each voted to relinquish their individual charters in this Society and have re-formed a multi-county society and requested charter for such a component society. Since the greater part of the membership of the re-formed component society is in the Sixth District, and to avoid the complication of two councilors having jurisdiction over counties united into one component society, this amendment is suggested.

These amendments are presented for reading at the first meeting of the House of Delegates, and will be voted upon at the last meeting, according to the By-Laws provision for making amendments in Chapter XV.

Respectfully submitted,

A. W. FEGTLY, M.D., *Chairman*

#### CONTROL OF CANCER

K. E. Voldeng, Chr., Wellington; J. P. Berger, Wichita; A. A. Fink, Topeka; H. L. Hiebert, Topeka; J. J. Hovorka, Emporia; W. J. Kiser, Wichita; M. V. Laing, Kansas City; C. H. Miller, Parsons; O. F. Prochazka, Liberal; D. C. Reed, Wichita; R. H. Riedel, Topeka; N. P. Sherwood, Lawrence; C. D. Snyder, Winfield; R. E. Speirs, Dodge City; R. E. Stowell, Kansas City; J. T. Swanson, Independence; J. F. Thurlow, Hays; G. M. Tice, Kansas City; H. M. Wiley, Garden City; L. E. Vin Zant, Wichita.

*To the House of Delegates:*

This committee continued an energetic program throughout the state during 1952 and 1953.

The major task was the organization and staging of the Mid-West Cancer Conference at Wichita on April 2 and 3, 1953. As has been done in past years, the committee succeeded in obtaining outstanding medical men in the field of cancer to be guest speakers at this fine conference. Dr. Robert E. Stowell, professor of pathology, University of Kansas School of Medicine, deserves a tremendous amount of credit for time and efforts to obtain the professional guest speakers. The

members of the committee representing the Sedgwick County Medical Society deserve credit for the work they did on local arrangements and promotion of this meeting.

Professional education throughout the state is a constant field of endeavor for this committee. For this purpose, and with financial aid from the Kansas Division of the American Cancer Society, the Cancer Bulletin and Cancer Monographs have been sent regularly to all Kansas physicians.

The interest that this committee takes in approved diagnostic tumor clinics throughout the state continues. It is partly through the stimulating influence of this committee that many of these clinics are not only approved by the state medical society but by the American College of Surgeons.

A rather new approach has been made in promoting the philosophy of annual physical check-ups by the family physician, in that new history and examination forms have been distributed among lay organizations in certain counties. This has been on a trial basis, and the committee is now anxious that this be more widely used throughout the state and used repeatedly in order to carry out the national theme of making "Every Doctor's Office a Detection Center."

A subcommittee is in the process of formulating a plan to more thoroughly utilize the mass chest x-ray survey throughout Kansas with the primary interest being the detection of new growths. It is hoped that during 1953 a well organized program will be set in motion.

Following suggestions by this committee, the Kansas Division of the American Cancer Society has assisted in the financing of three projects for postgraduate teaching at the University of Kansas School of Medicine. These consist of postgraduate courses in surgery and separate courses offered to both technicians and doctors for training in exfoliative cytology.

The chairman wishes to take this opportunity to express his appreciation and thanks to the members of the committee for their excellent co-operation in the various projects and their attendance at the five meetings which were held throughout the year, and also to Mr. Ebel, Mr. Pulford, and their assistants for their help in committee work. The Kansas Division of the American Cancer Society and the University of Kansas School of Medicine have been very co-operative and of great help in carrying out the projects which the committee has advised.

Respectfully submitted,

KARL E. VOLDENG, M.D., *Chairman*

#### CONTROL OF TUBERCULOSIS

W. G. Rinehart, Chr., Pittsburg; A. L. Ashmore, Wichita; Andre Baude, Topeka; F. E. Bishop, Atwood; H. L. Bogan, Baxter Springs; R. I. Canuteson, Lawrence; H. L. Hiebert, Topeka; R. H. Moore, Lansing; H. P. Palmer, Scott City; L. E. Strode,



Girard; C. F. Taylor, Norton; F. A. Trump, Ottawa; C. J. W. Wilen, Manhattan.

*To the House of Delegates:*

The committee has not held a regular group meeting, but individual members have been attending meetings on and aiding in the promotion of a tuberculosis hospital for Southeast Kansas. Committee members also participated in the program on health education sponsored by the Kansas Tuberculosis Association at Kansas State Teachers' College, Pittsburg.

Respectfully submitted,

W. G. RINEHART, M.D., *Chairman*

#### EMERGENCY MEDICAL CARE

Donald P. Trees, Chr., Wichita; W. H. Algie, Kansas City; R. M. Carr, Junction City; R. W. Fernie, Hutchinson; G. F. Gsell, Wichita; G. W. Hammel, El Dorado; F. X. Lenski, Sr., Iola; J. M. Mott, Topeka; M. Snyder, Salina; V. A. Vesper, Hill City; W. G. Weston, Arkansas City.

*To the House of Delegates:*

The Committee on Emergency Medical Care of the Kansas Medical Society has not had a formal meeting this year. The chairman of the committee and Dr. W. H. Algie, in the roles of deputy and assistant deputy of the Medical Health Section of the State Civil Defense Organization, attended several meetings of this organization in Topeka during the year. Several conferences were also held with Dr. Thomas R. Hood, head of health and medical services for the state of Kansas.

Through the efforts of these men, the Advisory Committee of the State Civil Defense allotted \$600 for a postgraduate course for practicing physicians in the state of Kansas to be given as a co-ordinated effort of the University of Kansas School of Medicine and the Kansas Medical Society. Nothing further along this line has been accomplished.

At some of the above conferences, it was deemed advisable that, at a state level, the Health Section should advise the purchasing and equipping of portable auxiliary hospitals. It was felt that the stockpiling of these materials would be the plan most likely to succeed in giving aid to communities throughout the state.

It is hoped that during the ensuing year these programs which have been initiated may reach culmination.

Respectfully submitted,

DONALD P. TREES, M.D., *Chairman*

#### ENDOWMENT

J. W. Randell, Chr., Marysville; F. K. Bosse, Atchison; G. H. Jackman, Cimarron; E. H. Terrill, Wichita.

*To the House of Delegates:*

For the past three or more years the Committee on Endowment has worked for the betterment of medical education at the University of Kansas Medical Center. The committee has continued this policy.

Most of its efforts have been to increase the endowment for medical education in Kansas, not only for medical students but also for postgraduate students.

This project has shown definite, continuous improvement, but there are still many members of the profession who have not sponsored the same. Some contributions have been made by county society groups. Where possible, individual contributors should be given personal credit. Special recognition will be given to sponsors whose gifts total \$500 or more. Checks are made to the order of Continuation Study, Student Union Fund, and may be sent to the central office of the Kansas Medical Society, from where they will be sent to Edward H. Hashinger, M.D., president, Student Union Corporation.

The committee acknowledges the assistance given by the Council and the central office, particularly in the distribution of material.

Respectfully submitted,

J. W. RANDELL, M.D., *Chairman*

#### EXPERT TESTIMONY

C. E. Joss, Chr., Topeka; E. J. Frost, Wichita; J. L. Lattimore, Topeka; J. W. Spearing, Columbus; E. M. Sutton, Salina.

*To the House of Delegates:*

Since this committee does not meet unless requested to do so, we are happy to report that there was no necessity for a committee meeting during the past year. We feel that this speaks well for the medical profession in Kansas.

Respectfully submitted,

C. E. JOSS, M.D., *Chairman*

#### HISTORY

R. R. Melton, Chr., Marion; A. C. Gulick, Goodland; H. E. Haskins, Kingman; C. S. Huffman, Columbus; Alfred O'Donnell, Ellsworth; O. D. Walker, Salina.

*To the House of Delegates:*

The Committee on History found it impractical to meet during the past year, and therefore has no report to present.

Respectfully submitted,

R. R. MELTON, M.D., *Chairman*

#### HOSPITAL SURVEY

A. C. Armitage, Chr., Hutchinson; P. L. Beiderwell, Belleville; M. E. Christmann, Pratt; A. P. Cloyes, El Dorado; E. G. Diamond, Kansas City; E. R. Gelvin, Concordia; J. A. Howell, Wellington; O. W. Longwood, Stafford; R. M. Owensby, Mankato; G. E. Paine, Hutchinson; H. C. Sartorius, Garden City; F. C. Shepard, Clay Center; C. M. Smith, Sedan.

*To the House of Delegates:*

Several meetings of this committee were held during the year, and there was one long session of a special subcommittee. The principal project pertained to regulation of public medical institutions.

The Kansas State Board of Social Welfare requested this committee to establish medical policies



# Inhibition of Excess Parasympathetic Stimuli in Peptic Ulcer with Banthine®

Medical literature now contains more than 200 references to the beneficial role of Banthine Bromide (brand of methantheline bromide) as evidenced by a marked healing response of peptic ulcers. Rapid symptomatic improvement, particularly with reference to pain relief, is followed by roentgenographic demonstration of crater filling.

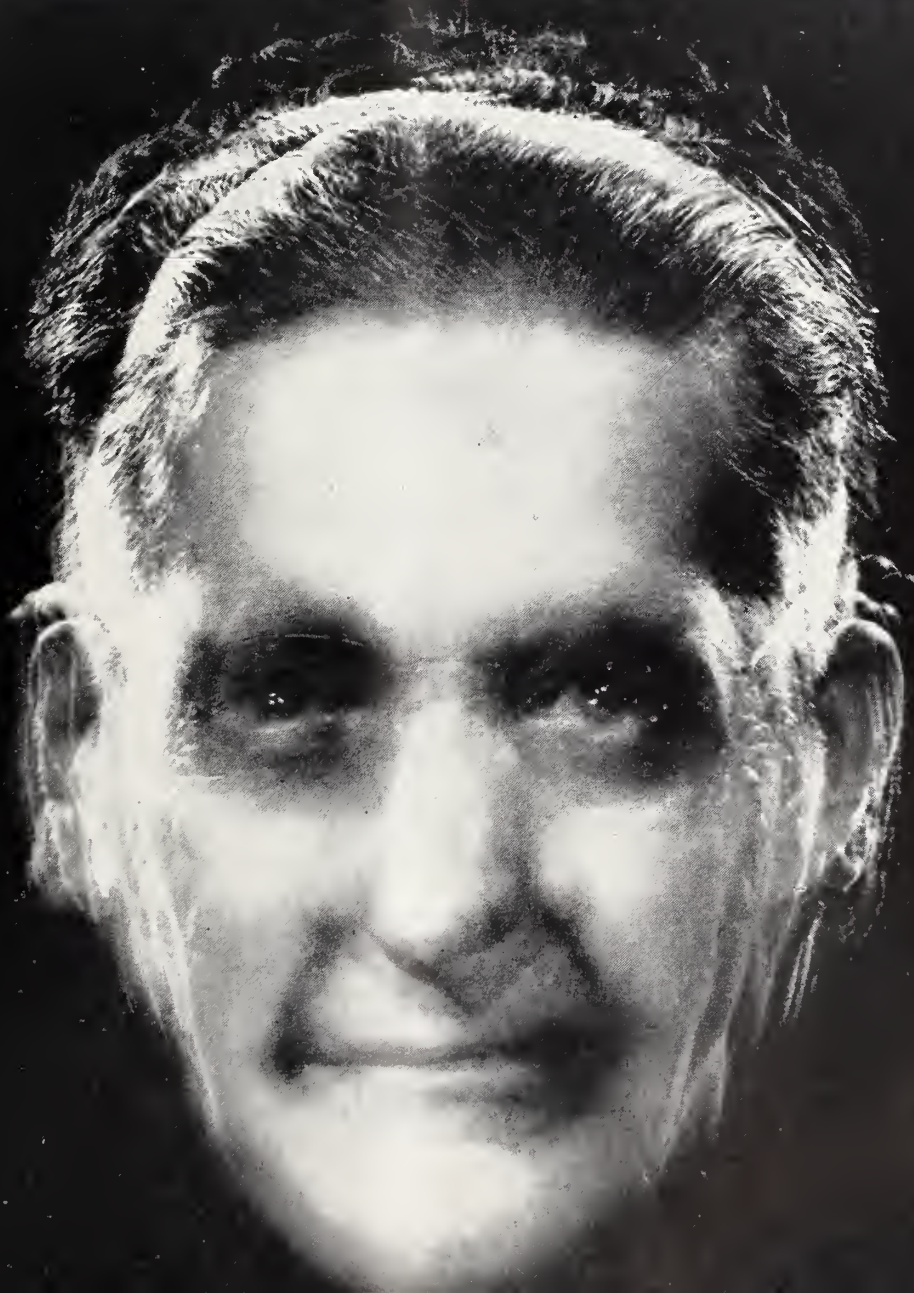
The therapeutic action of the drug in decreasing hypermotility and hyperacidity, together with the remarkable early subjective

benefit, is indeed a desired approach in ulcer management.

Treatment is individualized to the patient's needs. One or two tablets (50 to 100 mg.) is administered every six hours, around the clock, in conjunction with appropriate diet control and antacid medication as indicated.

Banthine is accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Searle: Research in the Service of Medicine.

Ulcer Facies Composite



that would be acceptable to the profession in Kansas and in compliance with federal regulations for the establishment of public medical institutions. These have become possible because of a new federal grant with which boards of county commissioners may establish care homes for indigent patients which are something below hospital levels but above nursing home levels. A federal requirement declares that all patients must be admitted for medical reasons.

This committee has worked out what is believed to be the necessary regulations and has obtained the approval of the Kansas State Board of Social Welfare. They are now being submitted to boards of county commissioners who may, if they wish, establish such institutions. Further details in this regard are available on request, but in brief a public medical institution will enable counties to obtain additional federal aid for patients who otherwise would require long-time hospitalization. It is believed that such institutions, where feasible, will relieve congestion in hospitals and perhaps operate to reduce the over-all health care cost for indigents.

A second project completed by this committee consisted of sending a letter to the membership announcing the purpose of medical reports for patients in rest homes. This letter was presumably received by each member of the Kansas Medical Society, and its content is self explanatory.

Your current committee recommends further projects to include the careful review of hospital construction in Kansas and is proposing to conduct such a survey in connection with the Committee on Rural Health. Because of the more pressing problems described above, it was not possible to complete this survey.

Respectfully submitted,

A. C. ARMITAGE, M.D., *Chairman*

#### INDUSTRIAL MEDICINE

J. A. Grove, Chr., Newton; H. O. Anderson, Wichita; J. L. Beaver, Wichita; W. A. Grosjean, Winfield; C. W. Hall, Hutchinson; J. G. Hughbanks, Independence; E. S. Miller, Kansas City; H. L. Regier, Kansas City; R. W. Urie, Parsons; M. A. Walker, Kansas City; F. N. White, Russell.

#### *To the House of Delegates:*

The Committee on Industrial Medicine has not met during the past year, as no matters requiring committee action were brought to the attention of the chairman.

Respectfully submitted,

JOHN A. GROVE, M.D., *Chairman*

#### MATERNAL WELFARE

D. E. Gray, Chr., Topeka; F. A. Allen, Newton; P. D. Brown, Salina; L. A. Calkins, Kansas City; H. C. Clark, Wichita; H. M. Floersch, Kansas City; R. G. Heasty, Manhattan; G. M. Martin, Topeka; H. S. O'Donnell, Ellsworth; R. A. Schwegler, Lawrence; R. A. West, Wichita.

#### *To the House of Delegates:*

Your Committee on Maternal Welfare has held

two meetings in the past year. Certain accomplishments have been realized and certain projects are currently in progress. At the 1952 meeting of the Kansas Medical Society, the committee sponsored a reorganizational meeting of the Kansas State Obstetrical Society. The latter stimulated gratifying interest and has inaugurated a plan for three meetings yearly on subjects of obstetrical interest.

The committee has completed revision of "Minimum Standards of Obstetrical Care," which was published in the February issue of the JOURNAL. It is being distributed in pamphlet form by the Kansas State Board of Health.

As in the past, the committee has reviewed maternal mortalities. It has approved an expanded questionnaire to be completed in all cases of maternal death. This form has been revised by Dr. G. Martin of the Board of Health, and it should provide more adequate information for the committee in its studies. A plan has been devised for the co-operation of the Board of Health, the Kansas State Obstetrical Society, and this committee for the pursuit of this study and dissemination of valuable information obtained. The possibility of studying neonatal deaths and stillbirths in a similar manner is being explored.

The committee is continuing to encourage the establishment of classes for expectant mothers and welcomes the opportunity of providing material or suggestions for any areas desiring them.

Respectfully submitted,

D. E. GRAY, M.D., *Chairman*

#### MEDICAL ASSISTANTS

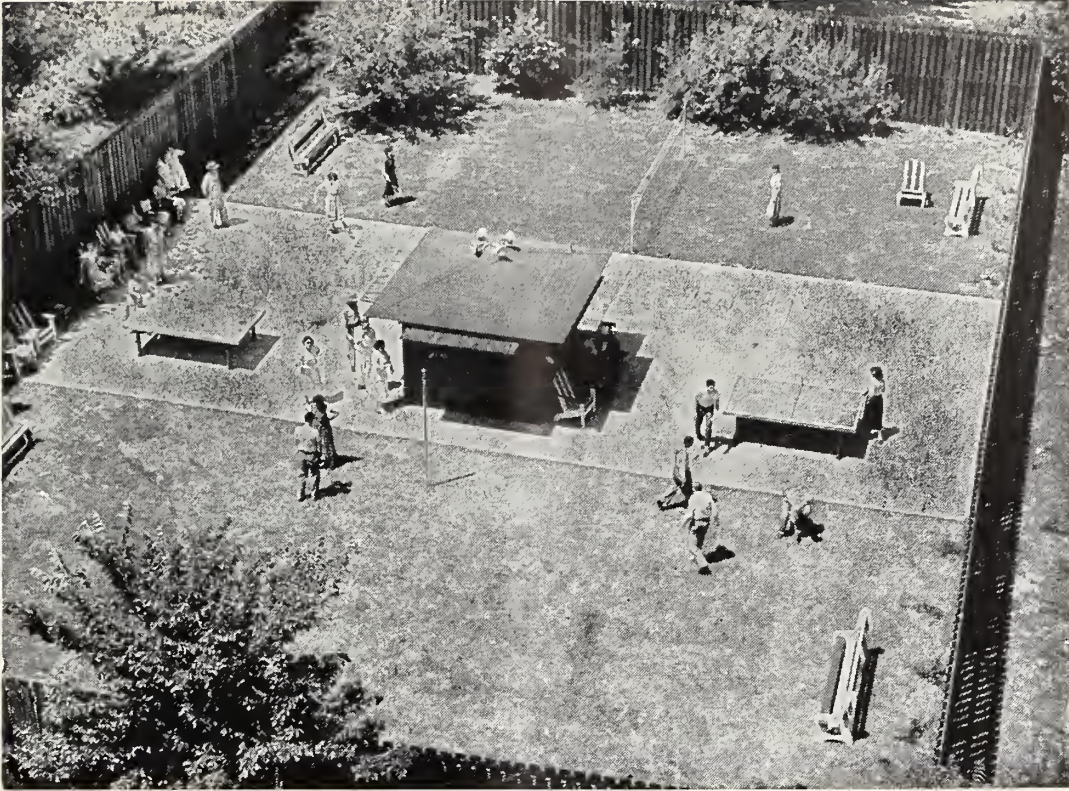
A. E. Hiebert, Chr., Wichita; K. J. Bierlein, Pittsburg; E. J. Grosdidier, Kansas City; J. A. Holmes, Lawrence; R. R. Preston, Topeka.

#### *To the House of Delegates:*

Two committee meetings have been held, the first on November 8, 1952, at Emporia and the second on February 8, 1953, at Wichita. The former meeting was held on Saturday prior to the mid-year meeting of the Medical Assistants' Society at Emporia. Not enough can be said for the hospitality of the local chapter of the Emporia medical assistants as well as the doctors of the local medical society.

Highlights of the meeting were: the joint meeting of the executive committee of the Medical Assistants' Society and the Kansas Medical Society Committee on Medical Assistants, a dinner prepared and served by the medical assistants at a private country club, the educational and entertaining program the next day, and finally, the tea at the lovely home of Dr. and Mrs. Philip W. Morgan. Dr. Warren F. Bernstorff, president of the Kansas Medical Society, attended the committee meeting as well as the general meeting of the society the next day. In his address he emphasized the desirability of planned long-range programs for





Outdoor Recreation Area

In psychiatric therapy recreation is not only "therapy," but play as well. It is important that patients have a chance to get out of their sleeping rooms. The new recreation area at the Neurological Hospital offers almost every patient within a few days after admission, a chance "to get out of the sleeping areas."

Inquiries may be directed to the hospital or to the individual psychiatrist.

Sylvia Allen, M.D.

Edward E. Baumhardt, M.D.

Marvin L. Bills, M.D.

John D. DeMott, M.D.

Merrill T. Eaton, Jr., M.D.

B. Landis Elliott, M.D.

Louis H. Forman, M.D.

Paul Hines, M.D.

Morton Jacobs, M.D.

Milton E. Kirkpatrick, M.D.

Frank J. Koenig, M.D.

Louise B. Loewy, M.D.

Albert Preston, Jr., M.D.

G. Wilse Robinson, M.D.

G. Wilse Robinson, Jr., M.D.

William F. Roth, Jr., M.D.

A. Theodore Steegmann, M.D.

E. H. Trowbridge, Jr., M.D.

James E. Young, M.D.

## The Neurological Hospital Association

2625 WEST PASEO

KANSAS CITY 8, MISSOURI



medical assistants, with a view of taking up various problems of medical assistants arising in the doctor's office.

During the past year, two new chapters of medical assistants have been organized, one in Iola and the other in Wellington.

Too much emphasis cannot be attached to the importance of medical assistants as a positive force for public relations in medicine. The object of the organization is to make more effective medical assistants for the doctors. To them their meetings are just as essential as medical meetings are to the doctors.

We would recommend:

1. Doctors should encourage their assistants to belong to the Kansas Medical Assistants' Society, and also attend as many of the meetings as possible. It is further suggested that the doctors pay the expenses of the assistants to these meetings.

2. Every chapter of the Medical Assistants' Society should have a councilor from the local medical society to act as a liaison officer.

3. In areas that have no chapter of the Medical Assistants' Society, the local medical society might do well to appoint a committee or an advisor who could look into the merits of promoting the organization of such a local chapter. It would seem proper that local medical societies would invite an organization designed purely to increase the efficiency of medical assistants.

Respectfully submitted,

A. E. HIEBERT, M.D., *Chairman*

#### MEDICAL ECONOMICS

B. A. Nelson, Chr., Manhattan; C. M. Alderson, Dodge City; J. N. Blank, Hutchinson; A. W. Butcher, Wakefield; T. Dechairo, Westmoreland; R. L. Gench, Fort Scott; D. H. Macrae, Topeka; G. E. Milbank, Wichita; M. B. Miller, Topeka; C. V. Minnick, Junction City; L. S. Nelson, Jr., Salina; P. A. Pettitt, Paola; E. L. Robinson, Independence; R. Sohlberg, Jr., McPherson; LeRoy Shepherd, Larned; H. L. Songer, Lincoln.

*To the House of Delegates:*

The disability income insurance plan approved by the Committee on Medical Economics, the Council, and the House of Delegates was successfully effectuated during the past year. Enrollment is being completed in the last districts of the state, and the underwriter's representative reports that over 65 per cent of the membership will be covered. This proportion is well over the 50 per cent requirement, and all applicants were accepted without examination, regardless of physical condition or insurability. The underwriter is the Washington National Insurance Company.

Stimulated by the program, the Commercial Insurance Company, with which the Society has carried a group policy for several years, expanded its program, increased its benefits, and improved its contract materially. This company plans a program of visitation to the members who wish to expand their

contracts to full coverage and also to make it available to remaining members as yet not enrolled.

The committee is co-operating with these two companies. It is also making their plans available to all new members of the Society who may enroll within a 40-day limit from the date of notification of Society membership.

It is felt that good protection is now provided with these two contracts. Disability income up to \$733 per month is provided, with excellent contract features and with premium rates on a group basis markedly below the rates for individual contracts.

The sub-committee on insurance, Dr. Milton Miller, Dr. Donald H. Macrae, and Dr. Barrett Nelson, functions as the liaison between the companies and the Society, supervises the functioning of the plan, and is authorized to pass on grievances and complaints.

An effort was made to obtain a life insurance contract with preferential terms and rates on a group basis. A reliable company expressed willingness to negotiate such a contract, but the committee was surprised to learn that Kansas laws prohibit group life insurance except on an employer-employee basis. It is hoped that something analogous may be made available with preferential terms if a given percentage of the Society enrolls as applicants. This possibility is under investigation.

The reorganization of social welfare plans in an effort to correlate and make uniform the various county plans is under study. Pressure is being applied by the state welfare board to require county medical societies to assume responsibility for administration of all welfare funds for physician services, drugs purchased, and hospital expense. It is felt that such a plan may result in the last two items absorbing a disproportionate share of available funds and leaving inadequate compensation for the physician furnishing indigent medical care, to say nothing of the headaches and undesirable responsibilities involved in the detailed administration problems. It is hoped a satisfactory compromise will ensue.

The committee is much interested in activities in Washington relevant to medical economics, specifically (1) the reorganization of the Federal Security Agency to eliminate the stifling, dictatorial, paternalistic socialism of Oscar Ewing; (2) the measures before Congress to ease the tax load on funds allocated by self-employed individuals for retirement funds; (3) the report of the Magnuson Committee. It is gratifying to note definite evidence that the new administration is releasing the screws of discriminatory pressure which the medical profession has so long suffered from the arrogant bureaucracy so recently discredited and ousted from power.

Respectfully submitted,

BARRETT A. NELSON, M.D., *Chairman*

Your Laboratories . . .  
Our Responsibility

# Pathologically Speaking

## ELECTROLYTES

**D**URING the past few years a great deal of interest has been aroused in a better understanding of body fluids.

Water and electrolyte solutions properly prepared and administered enable the physician to save many lives. By the same token, many patients are lost because of a deficiency of water and/or electrolytes. Deficiency of electrolytes may easily lead to death. One may also use water and/or electrolytes injudiciously and create serious and sometimes fatal complications by producing an excess of any of these constituents.

Problems concerning water and electrolyte imbalance occur in practically all fields of medicine and should not be considered only as a surgical problem. Among the chief medical problems are those involving patients having prolonged vomiting or diarrhea, as in acute gastro-enteritis, pyloric or intestinal obstruction, uremia, acidosis of diabetes and untreated cardiac decompensation. Children with gastro-enteritis develop electrolytic imbalance far more quickly than do adults. For the surgeon, the greatest problem occurs in the patient with prolonged vomiting or diarrhea or with prolonged gastric negative suction where large quantities of electrolytes are lost.

To a certain degree, there is a relationship between water and electrolyte balance. However, this

is not always true. Glucose and water given intravenously may actually wash out important ions, such as sodium and potassium, if the glucose solution produces diuresis.

From the practical aspect, the laboratory can give very useful and at times diagnostic information. The introduction of the flame photometer has been of great value in estimating sodium and potassium levels. The accuracy and rapidity of reporting is of great value therapeutically. If patients are maintained entirely on parenteral fluids, daily levels of the important ions should be determined, at least until balance is achieved.

Estimation of chlorides is easy and the value is well established. The  $\text{CO}_2$  offers indirect measurement of the bicarbonate ion in the determination of states of acidosis or alkalosis. Laboratory data concerning the levels of sodium, potassium, carbon dioxide and chlorides offer the clinician an excellent opportunity to correct deficiencies, correct water balance and to institute or proceed with therapeutic measures.

Additional laboratory procedures of value in this field include serial counts of red blood cells, hemoglobin, serum proteins and hematocrit. Urine chloride values are very helpful, and the test for them is rather simple to perform.

**RALPH EMERSON DUNCAN, M. D.**

**LORAIN E. SCHULTZ, M. D.**

**ALBERT E. UPSHER, M. D.**



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*Bothwell Memorial Hospital*  
WARRENSBURG, MO.  
*Warrensburg Medical Center*

## Curbstone Consultation

Of all the endocrine glands the thyroid is the most common site for tumors. The symptoms of these neoplasms are often insidious. Early symptoms include a discrete lump in the thyroid area, dysphagia and voice changes caused by pressure on the larynx.

From: THE CANCER BULLETIN, p. 73, May-June, 1952, Missouri Edition.



## MEDICAL SCHOOLS

G. G. Whitley, Chr., Douglass; R. G. Ball, Manhattan; C. D. Behrhorst, Winfield; O. W. Davidson, Kansas City; H. W. Day, Kansas City; M. C. Eddy, Hays; C. A. Gripkey, Kansas City; A. C. Hatcher, Wellington; L. C. Hays, Cedarvale; A. L. Hilbig, Liberal; V. H. Hildyard, Baldwin; R. H. Maxwell, Wichita; R. C. Polson, Great Bend; M. J. Renner, Goodland; R. E. White, Garnett.

*To the House of Delegates:*

In 1952 the House of Delegates passed a resolution directing the Committee on Medical Schools to visit the University of Kansas Medical Center and answer certain questions that had been raised regarding the operation of this school.

Your committee has met on two occasions and in addition there have been numerous conferences attended by subcommittees.

The committee believes it has thoroughly inquired into the specific questions that were asked and has also explored a number of other subjects. This report is prepared but, because of its confidential nature, will be distributed in mimeographed form to the members present at the meeting of the House of Delegates.

Respectfully submitted,  
G. G. WHITLEY, M.D., *Chairman*

## MENTAL HEALTH

L. W. Hatton, Chr., Salina; A. J. Adams, Wichita; R. L. Drake, Wichita; D. B. Foster, Topeka; T. L. Foster, Halstead; R. F. Freeman, Topeka; Mary T. Glassen, Phillipsburg; E. D. Greenwood, Topeka; C. C. Hawke, Winfield; C. J. Kurth, Wichita; W. C. Menninger, Topeka; J. T. Naramore, Larned; W. F. Roth, Jr., Kansas City; D. R. Wall, Wichita; M. E. Wright, Lawrence.

*To the House of Delegates:*

Two meetings of the Mental Health Committee were held. The principal effort was a continuation of consideration of legislation to facilitate the entrance of emotionally disturbed patients to care in the state hospitals by revision of commitment proceedings.

This revision is considered desirable because of the stigmatizing influence and unnecessary delay under the existing code. A committee of the Kansas Bar Association, headed by Mr. Jack Copeland, collaborated in this endeavor. It was resolved that the Kansas Bar Association be requested to continue working with the Mental Health Committee of the Kansas Medical Society in drafting acceptable legislative proposals for the revision of commitment proceedings.

However, the proposition was not placed before the 1953 legislature because of the improbability of its being passed. It was also suggested that this be recommended to the Kansas State Mental Hygiene Society as a project for the coming two years.

The circulation of literature was approved which was designed to enlighten the profession in regard to a constitutional amendment to allow taxation to raise funds for the construction of buildings for the state hospitals.

Also considered were various aspects of mental health such as: the psychiatric screening of applicants to medical schools, the mental health aspects of students in state colleges; mental hygiene clinics at areas within the state, and improved methods of dealing with delinquency and sex deviation.

In this latter, the committee approved, in principle, a resolution of the bar association that the Legislative Council study the problems involved in the preparation of more adequate legislation to deal with sex offenders.

Respectfully submitted,  
LLOYD W. HATTON, M.D., *Chairman*

## NECROLOGY

J. F. Gsell, Chr., Wichita; J. D. Clark, Wichita; J. D. Colt, Sr., Manhattan; G. M. Gray, Kansas City; F. L. Loveland, Topeka.

*To the House of Delegates:*

The Committee on Necrology submits the following list of members of the Kansas Medical Society whose deaths have been reported since the last meeting of the House of Delegates:

<i>Name and Address</i>	<i>Age</i>	<i>Date</i>
		1952
Dr. John Calvin Ulrey, St. John	75	Feb. 24
Dr. Seth LeRoy Cox, Topeka	71	Feb. 26
Dr. Alexander C. Craig, Topeka	69	Feb. 29
Dr. Charles Napoleon Petty, Altamont	83	Mar. 16
Dr. Philip Johnson Clark, Hays	36	Mar. 23
Dr. Earl LeRoy Vermillion, Salina	56	Apr. 7
Dr. William R. Kenoyer, Hugoton	54	Apr. 16
Dr. John Benjamin Nanninga, Newton	53	Apr. 18
Dr. French Miles Smith, Lyndon	73	Apr. 19
Dr. Ralph Allison Light, Chanute	80	June 3
Dr. Fred Calhoun, Sedan	81	June 8
Dr. Hal Ellsworth Marshall, Wichita	55	June 15
Dr. Elven O. Baker, Wichita	75	June 17
Dr. John Lillie Evans, Wichita	73	June 25
Dr. James Sutherland Hibbard, Wichita	47	July 9
Dr. Harold William Palmer, Wichita	53	July 12
Dr. Edward Carlyle Rainey, Wichita	60	July 20
Dr. Everett Lucius Cooper, Wichita	50	July 22
Dr. Elijah Mobry Owen, Lawrence	89	Aug. 19
Dr. J. Eliot Foltz, Hutchinson	73	Aug. 20
Dr. Richard Robert Sheldon, Salina	52	Aug. 24
Dr. Thaddeus Carey Kimble, Miltonvale	76	Aug. 28
Dr. Harry Lewis Stelle, Pittsburg	80	Aug. 30
Dr. John B. Anderson, Valley Falls	75	Sept. 12
Dr. Bessie Belle Little, Manhattan	81	Sept. 24
Dr. Ethel Hill Sharp, Pittsburg	76	Sept. 24
Dr. James Dinwiddie Bowen, Topeka	46	Oct. 3
Dr. Edward Hinman Johnson, Peabody	78	Oct. 23
Dr. Robert Hawkins, Marysville	93	Oct. 25
Dr. Milo Goss Sloo, Topeka	73	Nov. 4
Dr. Victor Robert Parker, Natoma	63	Dec. 3
Dr. Robert B. Stortz, Madison	35	Dec. 24
		1953
Dr. William Brown Newton, Glasco	74	Jan. 7
Dr. Orlin Pearl Wood, Marysville	73	Jan. 16
Dr. Paul Morton Krall, Kansas City	68	Jan. 23
Dr. Alfred E. Gardner, Wichita	83	Feb. 9
Dr. Edgar C. Duncan, Fredonia	77	Feb. 12
Dr. Harold Ross Fields, Johnson	36	Mar. 20

Respectfully submitted,  
J. F. GSELL, M.D., *Chairman*



E. R. SQUIBB & SONS 745 FIFTH AVENUE, NEW YORK 22, NEW YORK

Dear Doctor:

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Tolserol Tabs. 0.5 gram

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Sig: One tablet 3 to 5  
times a day. Take after  
meals or with 1/3 glass  
of milk.

*Usually  
Inadequate*

This prescription is typical of many written for Tolserol Tablets\*, as seen in a recent prescription survey.

Although some patients will respond to such low dosage, much better results can be obtained by following the recommended dosage: 1 to 3 grams, 3 to 5 times per day.

In accordance with this recommendation, the first dosage schedule for a patient could be:

R<sub>x</sub>

Tolserol Tabs. 0.5 gram

Disp. #100

Sig: Two tablets 3 to 5  
times a day. Take after  
meals or with 1/3 glass  
of milk.

*Better*

Complete information on the use of Tolserol in muscle spasm of rheumatic disorders, neurologic disorders, and acute alcoholism is available from your Squibb Professional Service Representative.

Sincerely yours,

*L. H. Ashe*

L. H. Ashe, Manager  
Professional Service Dept.

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## NOMINATING

J. H. A. Peck, Chr., St. Francis; W. P. Callahan, Wichita; N. E. Melencamp, Dodge City; W. M. Mills, Topeka; H. N. Tihen, Wichita.

*To the House of Delegates:*

As reported in the February and March issues of the JOURNAL, the Nominating Committee has named the following candidates for office:

President-elect ..... \*Murray C. Eddy, M.D., Hays  
Thomas P. Butcher, M.D., Emporia  
First Vice President .. \*John M. Porter, M.D., Concordia  
Karl E. Voldeng, M.D., Wellington  
Second Vice President .. Clyde W. Miller, M.D., Wichita  
Frederick E. Wrightman, M.D., Sabetha  
Constitutional Secretary \*Dale D. Vermillion, M.D., Goodland  
Albert C. Armitage, M.D., Hutchinson  
Treasurer ..... \*John L. Lattimore, M.D., Topeka  
Dwight Lawson, M.D., Topeka  
AMA Delegate ..... George F. Gsell, M.D., Wichita  
Cyril V. Black, M.D., Pratt  
AMA Alternate ..... \*Peter E. Hiebert, M.D., Kansas City  
Lee H. Leger, M.D., Kansas City

\* Indicates those now serving as officers of the Kansas Medical Society.

Additional nominations for all offices may be made from the floor.

Respectfully submitted,

HADDON PECK, M.D., *Chairman*

## POSTGRADUATE STUDY

H. H. Jones, Chr., Winfield; C. M. Barnes, Seneca; M. H. Delp, Kansas City; L. E. Filkin, Concordia; E. L. Mills, Wichita.

*To the House of Delegates:*

Faculties for circuit courses given throughout the state have been enlarged during the past year, and the caliber of presentations has been raised. It is hoped that there will be further expansion of faculty and subjects in the coming year.

Future location of stops on the circuit course may well be altered from one year to another, depending on local interest and local needs. It is the desire of the committee to continue to respect the wishes of the matriculants to the circuit courses. The various levels of graduate education and the time intervals will be maintained on the campus.

The wishes of the members of the Kansas Medical Society will again determine the caliber of the course, the faculty, and the length of presentation. The standards of the Academy of General Practice will continue to be a basic requirement of the courses.

A meeting of the committee will be held between the time of submitting this report and the annual session of the Kansas Medical Society. If that meeting results in further information of interest to the Society, a supplemental report will be given.

Respectfully submitted,

H. H. JONES, M.D., *Chairman*

## PUBLIC HEALTH AND EDUCATION

C. W. Miller, Chr., Wichita; T. P. Butcher, Emporia; W. M. Cole, Wellington; C. C. Hunnicutt, Sabetha; A. J. Rettenmaier, Kansas City; L. W. Reynolds, Hays; D. L. Tappen, Topeka; R. P. Watterson, McPherson; M. W. Wells, Winfield.

*To the House of Delegates:*

This committee has worked during the past two years on a project to classify public opinion towards medicine. Meetings with various groups, as reported to the House of Delegates last year, have continued until now it is believed a sufficiently broad picture has been obtained. These results, together with recommended future programs, will be outlined before the House of Delegates. Recommendations will include areas in which professional services appear to need improvement and suggestions for the creation of a better public understanding of medical service and its cost.

Respectfully submitted,

C. W. MILLER, M.D., *Chairman*

## RURAL HEALTH

J. H. A. Peck, Chr., St. Francis; L. E. Beal, Fredonia; F. H. Buckmaster, Elkhart; I. R. Burket, Ashland; D. C. Chaffee, Abilene; J. G. Claypool, Howard; J. C. Dysart, Sterling; J. T. Fowler, Osawatimie; L. G. Glenn, Protection; H. L. Graber, Hutchinson; A. J. Horejsi, Ellsworth; R. E. Jordan, Holton; J. F. Nienstedt, Beloit; Corbin Robison, Hoisington; E. A. Smiley, Junction City.

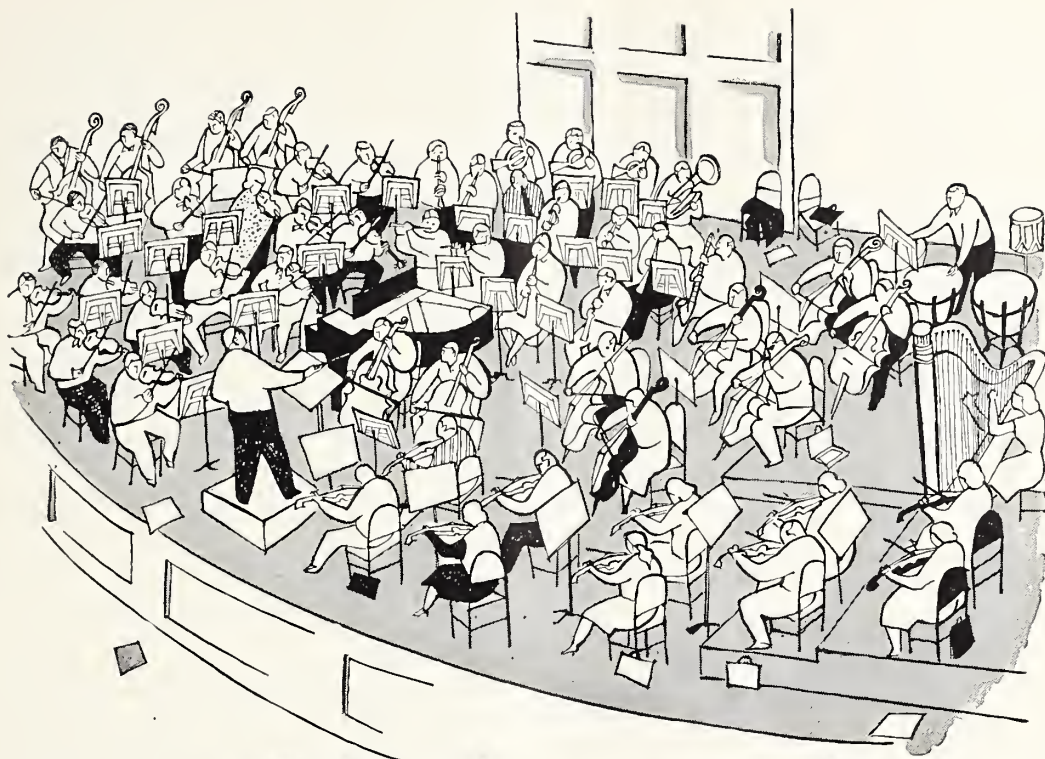
*To the House of Delegates:*

Several meetings have been held during the year. Attendance was good and interest in the work of this committee appears to continue high. Although it has been impossible to complete any of the various projects upon which this committee has worked, we can report progress and recommend to the committee of next year that these might be carried to completion. The minutes will provide additional details, but the following outline may serve to advise the Society concerning your committee's efforts.

1. Hospital construction has occupied an important place on our agenda. There exist today serious errors in the arrangement of hospital facilities caused, we believe, by the fact that architects employed in local projects frequently lack knowledge of what is particularly desirable in such planning. Your committee realizes that this is late because the bulk of such construction has been completed, but is preparing a brochure on this subject which, it is hoped, may be helpful to future hospital planning boards. This has been undertaken with the aid of architects experienced in hospital construction and should be completed in the near future.

2. Hospital locations is a problem closely related to the above. Your committee believes that an overabundance of hospitals creates as serious a problem as the lack of facilities, and it is conducting a survey on this subject with the co-operation of the Kansas State Board of Health.

3. The effective operation of physician placement services also is of interest to this committee. During the past year this committee has supervised the revision of the locations file currently used in our



they could stage their own symphony

... all the patients who represent the 44 uses for short-acting

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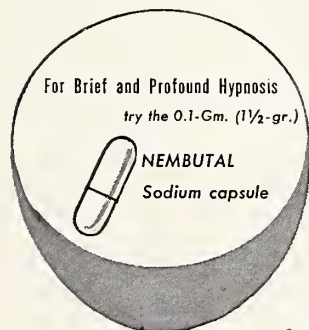
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executive office. This survey discloses that, except for the present dislocation of physicians because of needs of the armed forces, Kansas is well on the way toward supplying all areas of the state with adequate medical care. In spite of present handicaps, it is urged that the committee continue its efforts in this direction in the future.

4. The increasing use of tractors on farms has given rise to a new study, just begun. Your committee is currently negotiating with several important manufacturers of tractors and with the American Medical Association on a study of (a) reduction of vibrations to the operator and (b) protection against carbon monoxide poisoning.

5. Two members of this committee attended the A.M.A. Conference on Rural Health at Roanoke, Virginia, in February. Your chairman was privileged to appear on this program with a paper on what Kansas has accomplished in supplying physicians in rural areas.

Respectfully submitted,  
HADDON PECK, M.D., *Chairman*

#### STORMONT MEDICAL LIBRARY

W. L. Valk, Chr., Kansas City; E. Beebe, Olathe; E. L. Kalbfleisch, Newton; E. B. McKnight, Alma; Roy Moser, Holton; C. M. Nelson, Oberlin; A. K. Owen, Topeka.

#### *To the House of Delegates:*

During the past year the Stormont Medical Library has continued to be of great service to the medical life of Kansas. Since the opening of the library on May 15, 1946, the library has shown continued growth in number of volumes and service to patrons.

Under the able direction of Miss Garnett Mottice, librarian, we can expect continued growth and service by the Stormont Medical Library.

Respectfully submitted,  
WILLIAM L. VALK, M.D., *Chairman*

#### STUDY OF HEART DISEASE

P. W. Morgan, Chr., Emporia; D. R. Bedford, Topeka; P. M. Clark, Jr., Independence; K. L. Druet, Salina; C. W. Erickson, Pittsburg; L. H. Leger, Kansas City; F. J. McEwen, Wichita; G. L. Norris, Winfield; L. O. Peckenschneider, Halstead; J. M. Porter, Concordia; R. H. Riedel, Topeka; D. C. Wakeman, Topeka.

#### *To the House of Delegates:*

Your Committee for the Study of Heart Disease has held several meetings during the past year.

The annual four-day advanced refresher meeting was held late in October in Emporia, and Dr. E. Cowles Andrus, director of the Cardiovascular Section, Johns Hopkins University School of Medicine, was the guest instructor. As usual, the course was over-subscribed, and the matriculants came from all sections of the state. The Kansas State Board of Health, through funds at its disposal, authorized the

wire recording, transcribing and mimeographing of all the presentations and discussions.

The usual open one-day heart meeting for general practitioners was postponed from December to March and the meeting place changed from Topeka to the University of Kansas Medical Center. This was done to make it possible for the men of the state to see televised procedures and electrocardiograms via telephone since facilities for both are available in Kansas City. The group was also able to take advantage of special out-of-state speakers who were there at that time. The medical school co-operated freely in this venture, and the expense of one of the speakers was covered by funds made available through the Board of Health.

The committee studied problems dealing with the medical school, the Board of Health, and the Kansas Heart Association and has endeavored to make recommendations to guide activities of these agencies.

Plans for the fall refresher conference in advanced cardiology for a limited number of matriculants are well under way. The dates and the speaker will be announced by letter to all members of the Kansas Medical Society.

The committee has felt that its primary objective is to act as the integrating agency in matters pertaining to heart disease in Kansas. That this status has existed for some time is evidenced by the annual report in which the medical school, the public health service, and the Veterans Administration Hospital are mentioned as agencies with which the committee has worked.

At all times the committee has found the central office of the Kansas Medical Society most co-operative and extremely helpful.

Respectfully submitted,  
P. W. MORGAN, M.D., *Chairman*

#### VENEREAL DISEASE

H. E. Neptune, Chr., Salina; M. L. Bauman, Wichita; W. Mau, Topeka; G. S. Voorhees, Leavenworth; V. M. Winkle, Topeka.

#### *To the House of Delegates:*

Since the work formerly done by this committee is now handled by other groups and agencies, it was felt that there was no necessity for a meeting during the past year.

Respectfully submitted,  
H. E. NEPTUNE, M.D., *Chairman*

#### VETERANS ADMINISTRATION AFFAIRS

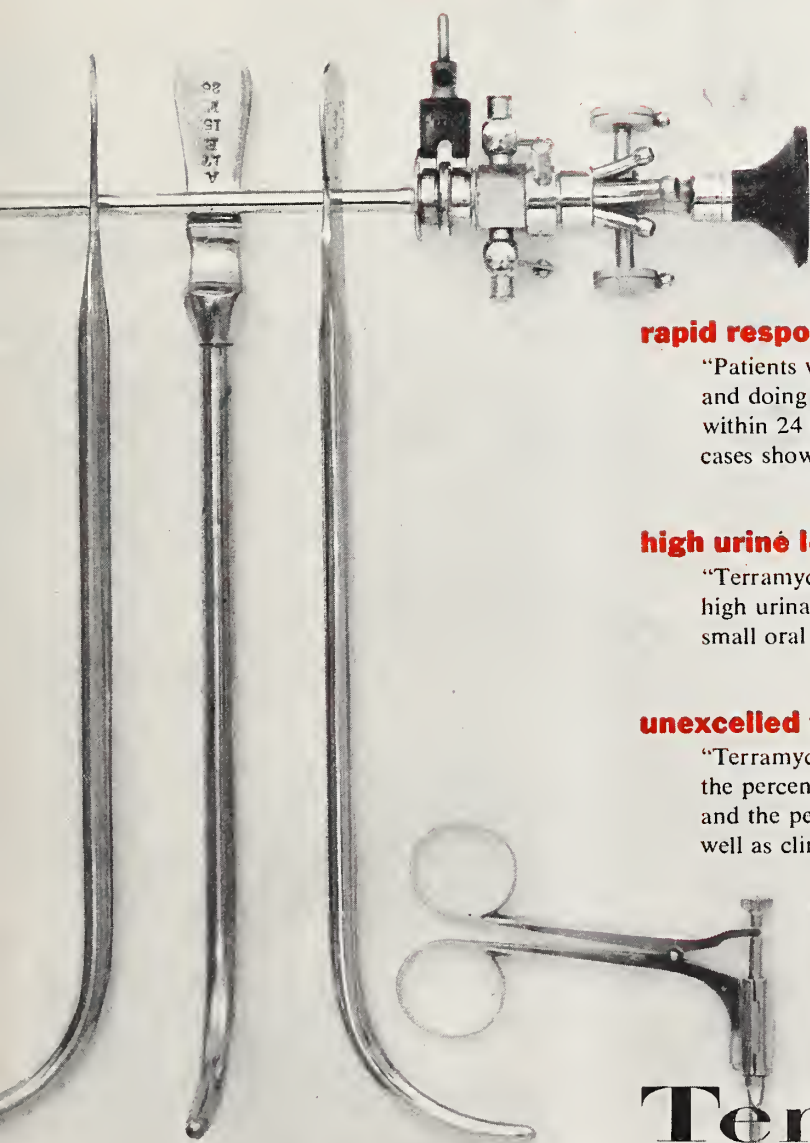
Spencer Fast, Chr., Atchison; R. E. Capsey, Centralia; E. R. Hill, Lyons; Kenneth Hunter, Lebo; M. W. Hall, Wichita.

#### *To the House of Delegates:*

There have been no problems presented to the Committee on Veterans Administration Affairs this



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1. Canad. M. A. J. 66:151 (Feb.) 1952.
2. J. Urol. 67:762 (May) 1952.
3. Ibid. 69:315 (Feb.) 1953.

# Terramycin

Brand of Oxytetracycline





year. Consequently, no meeting of this committee has been held.

Respectfully submitted,  
SPENCER FAST, M.D., *Chairman*

## ANNOUNCEMENTS

The annual conclave of the American College of Allergists will be held this year at the Conrad Hilton Hotel, Chicago, April 24 to April 29. The first part of the meeting will be devoted to instruction and the last three days to reporting of recent advances in the field of allergy by the investigators themselves. Complete information may be secured from the College, LaSalle Medical Building, Minneapolis 2, Minnesota.

Several meetings of interest to physicians will be held at the Hotel Shamrock, Houston, on May 15 and 16. Included are the seventh annual Symposium on Fundamental Cancer Research, the Cancer Pathology and Radiology Conference of the University of Texas M. D. Anderson Hospital and Postgraduate School of Medicine, and a meeting of the South Central Section of the College of American Pathologists. Information may be obtained from William O. Russell, M.D., 2310 Baldwin Street, Houston 6, Texas.

The next scheduled examinations, Part II (oral and pathological), for all candidates for the American Board of Obstetrics and Gynecology will be held at the Edgewater Beach Hotel, Chicago, May 17 through May 24. Formal notice of the exact time of each candidate's examination is being sent through the mail.

Applications for certification for the 1954 (Part I) examinations are now being accepted, and candidates are urged to make such application some time in August or September. Candidates now are required

to submit a list of all patients for whom they have been solely responsible admitted to the hospitals in which they practice, for the year preceding their application or the year prior to their request for reopening of their application, with the diagnosis, pathological diagnosis, nature of treatment, and end result.

Questions are to be referred to Robert L. Faulkner, M.D., American Board of Obstetrics and Gynecology, 2105 Adelbert Road, Cleveland 6, Ohio.

The fourth annual Dr. F. G. Thompson, Sr., lecture, "Changes in Surgery During the Past Decade," will be presented at the Thompson, Brumm and Knepper Clinic Building, 902 Edmond Street, St. Joseph, Missouri, at 8:00, Thursday, May 28. The speaker will be Dr. Robert S. Dinsmore, chief of surgery, Cleveland Clinic, Cleveland, Ohio. Physicians are invited to attend.

The fifth annual convention of the International Academy of Proctology will be held at the Plaza Hotel, New York City, May 29-31, directly preceding the A.M.A. meeting. There is no fee for attendance, and all physicians interested in proctology are invited. Programs may be secured from the Academy office, 43-55 Kissena Boulevard, Flushing, New York.

### CLASSIFIED ADVERTISEMENTS

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# THE JOURNAL

*of the*

## KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

Volume LIV

MAY, 1953

No. 5

### The Management of Interstitial Cystitis

John I. Waller, M.D.\*

Halstead, Kansas

One of the most painful and distressing diseases of the human urinary bladder is that of interstitial cystitis or Hunner's ulcer. This condition has been known by many different names, but it is most often referred to as Hunner's ulcer, elusive ulcer, or interstitial cystitis.

#### HISTORY

A review of the literature will show the multiplicity of terms used to describe that which is apparently the same condition. Thus Cullen<sup>1</sup> describes the condition as elusive ulcer and Skene<sup>2</sup> as interstitial cystitis. The Mayo Clinic has used the terms panmural fibrosis and submucous ulcer. Cystitis parenchymatosa, paracystitis, ulcus simplex, bladder fissure, irritable female bladder, ulcerative cystitis, Hunner's ulcer, circumscribed panmural cystitis, elusive ulcer, submucous ulcer, and interstitial cystitis have all been used to describe the same condition.

The term interstitial cystitis was probably first used by Skene in 1887, although Mercier<sup>3</sup> called attention to ulcers in the bladder in 1836. In 1870, Tait<sup>4</sup> also described the condition. A rare type of bladder ulcer in women was described by Hunner<sup>5</sup> in 1914, and the condition is often referred to in present day literature as Hunner's ulcer. In 1938, Kretschmer<sup>6</sup> reported a series of 138 cases of elusive ulcer of the bladder and did much to bring the condition to the attention of the profession. Nelson and Pinard,<sup>7</sup> Meisser and Bumpus,<sup>8</sup> Hinman,<sup>9</sup> Furness,<sup>10</sup> Hughes,<sup>11</sup> Peterson and Hager,<sup>12</sup> Folsom,<sup>13</sup> Higgins,<sup>14</sup> Fowler,<sup>15</sup> Dodson,<sup>16</sup> Seaman,<sup>17</sup> and many others have written on the subject.

#### ETIOLOGY

The etiology is unknown. Many theories have been

advanced as to why the condition occurs, but at present, nothing has been proved. Hunner was of the opinion that many of these patients had ureteral stricture or renal infection. Rosenow and Meisser<sup>18</sup> thought that streptococci of certain strains were responsible. They cultured streptococci from abscessed teeth of patients suffering with elusive ulcer and inoculated teeth of animals with the bacterial suspension, and some of these animals developed the bladder condition. They also injected rabbits with streptococci from dental abscesses in patients suffering from the disease. Kretschmer was not able to demonstrate any relationship between the condition and distant foci of infection. I have always felt that the etiology was due to disturbance in the nerve supply to the bladder.

#### PATHOLOGY

The pathologic changes are those seen in chronic inflammation such as polymorphonuclear and round cell infiltration and fibrosis. This is most marked in the submucosa. In certain areas the perivascular infiltration is quite noticeable. The bladder wall becomes thick as a result of fibrous tissue replacement.

The condition occurs much more often than it is recognized. The lesion is difficult to see and, unless one has the disease in mind because of the history, it is apt to be overlooked.

#### SEX

Interstitial cystitis occurs much more often in females than in males. In my series of cases it was present in females in 98 per cent of the cases. About half of the patients are unmarried. However, it does occur in males, and I have two men with typical interstitial cystitis under treatment at this time.

\* Department of Urology, Hertzler Clinic, and the Hertzler Research Foundation, Halstead, Kansas.

## AGE

The disease is one of adult life. It rarely occurs in those under 21 years of age. In my series the youngest was 28 years while the oldest was 78 years of age. Most of the patients were between 45 and 60 years of age.

## DIAGNOSIS

All of the patients were of a definite type as to nervous make-up. Whether the ulcer made them nervous or whether the nervous condition of the patient played a part in the etiology of the disease, I am unable to say.

All of my patients were well nourished and appeared quite healthy. In fact, they had few complaints except the bladder symptoms. It was interesting that 80 per cent of them had been labeled as neurotics by their physicians because of a clear urine and negative physical findings. Many had undergone cystoscopy and the condition had been overlooked.

While the history and symptoms are so characteristic that any patient with known Hunner's ulcer can make a diagnosis on a friend who has similar symptoms, it is one of the most mis-diagnosed bladder conditions known.

Most of the patients will have had their symptoms for many years before the diagnosis is made. There are two reasons for this. In the first place, the urine is quite clear, and analysis does not reveal evidence of bladder disease. In the second place, the condition usually occurs in adult females, and since many of these women complain of frequency and pain from urethritis, a careful study is not made.

The history is of utmost importance in diagnosis. Nocturia is a constant finding, and these patients suffer from loss of sleep and rest at night. They may void from every 15 minutes to 5 or 8 times a night. Frequency during the day is also a constant finding due to the decreased bladder capacity of these patients. One of my male patients was a rancher whose disease almost made him an invalid. He was compelled to stop attending farm meetings and church. He could not work. Another male patient was a dentist. He was forced to excuse himself every few minutes from his dental chair. This made working an almost impossible chore.

Characteristic of the disease is severe pain when the bladder is distended, relieved when the bladder is empty. As the bladder fills, the pain returns. Usually these patients point to a definite area when asked to locate the pain. Unless secondary infection is present, the urine is clear and they have very little pain or burning on voiding. Rather, they anticipate voiding as a means of relief.

Gross hematuria has been described as a symptom,

but I have rarely seen gross hematuria in a patient who has not had treatment of some type. After treatment, gross hematuria is fairly common.

Most of the patients give a history of having had the condition for several years and of having been treated with no results.

## CYSTOSCOPIC APPEARANCE

At cystoscopy, when the bladder capacity is measured, it will be found to be greatly reduced. The capacity may be only 2 or 3 ounces, or it may be 5 or 6 ounces if the ulcer is not far advanced. When the bladder is distended to capacity, severe pain will result. The bladder mucosa may appear normal except for the presence of a pinpoint size lesion which is usually located on the anterior wall of the bladder. The ulcer may be a single one, or there may be two or three present on opposite sides of the bladder. The lesion is usually small and appears as a lineal crack in the mucosa. There may be stellate radiations of redness from the ulcer. The area is painful if touched with the beak of the cystoscope and will bleed on distention of the bladder over its accustomed capacity. A stricture of the urethra or ureteral orifices may be present, or no other pathology may be found. The lesion must be differentiated from tuberculosis of the bladder, but the two conditions are so different that they are not confused by the trained cystoscopist. Smears, cultures, and guinea pig inoculation will rule out tuberculosis as a rule.

## TREATMENT

Many forms of treatment have been used, but there has been no standard form. The ulcers have been resected by open operation but often recur in another area of the bladder. Fulguration is often used, but it has been my feeling that repeated fulguration leads to severe scar formation and loss of elasticity of the bladder. It is not without danger of rupture of the bladder. Presacral neurectomy has been tried. Injections of the ulcer with alcohol or novocain are common.

I have obtained good results from overdistention of the bladder with water at cystoscopy under sodium pentothal anesthesia. The advantage of using sodium pentothal rather than spinal anesthesia is that it is almost impossible to rupture a bladder by distention under sodium pentothal. Even under deep anesthesia, the patient will arouse and move when the bladder is distended as far as it is safe to distend it. This awakening under sodium pentothal is almost diagnostic of interstitial cystitis in itself. While distending the bladder, one may watch the ulcer crack and bleed under direct vision of the cysto-



scope. The bladder is dilated and measured as to capacity after each dilatation. Finally, the point of maximum dilatation is reached (bleeding and pink tinged wash water).

If the bladder capacity before the procedure was 4 ounces, one may dilate the bladder up to 8 or 10 ounces. Following this, a catheter is anchored in the bladder and one-half ounce of one-fourth per cent Surfaccaine is instilled, followed by one ounce of 2 per cent silver nitrate. The bladder is kept at rest on catheter drainage for a week. I believe it is just as important to keep the bladder at rest following this treatment as it is to keep a lung at rest in the treatment of pulmonary tuberculosis. A fissure at the corner of the mouth or between the fingers will heal much faster if it is kept at rest. I start these patients on Banthine, 50 mg. four times a day, by mouth. If there is secondary infection, I also give antibiotics depending upon the type of infection present.

The patients continue on Banthine therapy after going home from the hospital. As a rule I ask them to return for further treatment in one month if necessary.

I have tried Banthine alone and dilatation of the bladder alone. While Banthine does more to relieve pain than any drug I know of, it does not tend to make a 16-ounce bladder out of a 2-ounce bladder. I personally feel that the combination of the two methods of therapy, along with adequate catheter drainage, gives excellent results. Next to the prostatic who has good results from operation, these patients are the most grateful people in the world.

ACTH and cortisone have been used with fair results. However, in my hands the results were not spectacular, and there is some danger in their use. Hunner noted 42 per cent recurrences following partial cystectomy and advised more palliative treatment. Folsom operated on many patients by this method and reported good results. Nesbit<sup>19</sup> used anterolateral cordotomy in some cases and obtained results that made him believe it was justified in certain instances. Others have used uretero-intestinal anastomosis without cystectomy with good results.

It is my feeling that the conservative treatment which I have outlined makes radical procedures unnecessary. Dodson advised the method of treating the bladder with silver nitrate and local anesthesia in 1926, and no risk is attached to its use. Banthine is also harmless and may be used for prolonged periods of time. The constant movement of the bladder tends to prevent healing of the ulcers, and prolonged catheter drainage allows the ulcer to heal.

#### PROGNOSIS

I never tell the patient with interstitial cystitis

that I will cure him. Many factors govern the prognosis. The number of ulcers present and the size and depth influence the results obtained. A small contracted bladder will be more difficult to dilate than one which holds 6 or 8 ounces. A bladder which is contracted from repeated fulgurations will be more difficult to treat. However, I have obtained excellent results in all cases from the treatment outlined. As a rule, pain is gone and frequency is improved after the first treatment. The patient is treated again in one month to six weeks, the intervals between treatment being lengthened as the patient improves and the bladder capacity increases toward normal. After a few months, many of them will be able to get along without bladder treatment and can be kept comfortable on Banthine alone. They should be kept under constant observation. I feel it is important that the details of the disease be explained to the patient and that he understand what you are endeavoring to accomplish in the way of treatment.

#### SUMMARY

1. The diagnosis and management of patients with interstitial cystitis is presented.
2. Treatment consisting of bladder dilatation, Banthine therapy, and catheter drainage is advocated.

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# The Treacherous Right Colon

W. G. Cauble, M.D.\*

Wichita, Kansas

Tumors in the region of the cecum and ascending colon have frequently been referred to as being "silent" in character. Carcinoma in that region frequently is far advanced before a diagnosis is made, and I am sure many of us have had the experience of taking care of patients who reported to us as soon as their symptoms occurred and then at operation we found an advanced malignancy. Carcinoma of the cecum and ascending colon is a treacherous lesion from a diagnostic standpoint because sometimes our routine x-rays and other studies fail to aid us.

It is the purpose of this paper to review the signs and symptoms of carcinoma of the right colon and to re-emphasize the importance of early diagnosis and treatment. Four cases will be presented to show some of the early symptoms and to illustrate that even the earliest treatment possible is frequently too late.

It is true that symptoms of carcinoma of the large bowel depend on the location. Ravdin and Bender,<sup>1</sup> in reviewing 286 cases of carcinoma of the colon, reported the following presenting symptoms for cancer of the cecum and ascending colon.

	<i>Per Cent</i>
Indigestion .....	78
Silent tumor .....	18
Blood seen by patient .....	14
Diarrhea .....	4
Tumor palpable .....	56

Rankin and Graham<sup>3</sup> state that symptoms of carcinoma in the right side of the colon may be classified under three main groups: (1) so called "dyspepsia," mild in character with few localizing symptoms and usually diagnosed as chronic appendicitis or chronic cholecystitis, (2) profound anemia, loss of weight, and loss of strength, and (3) a mass accidentally discovered in the right iliac fossa.

Approximately 13 per cent<sup>1</sup> of malignancies of the colon occur in the right side, and 35 per cent occur in the region of the hepatic flexure. This is fortunate because those occurring in other portions of the colon are probably more easily diagnosed and their symptoms may occur earlier. It is important to remember that over 50 per cent of all cancers of the large bowel and rectum can be felt with the examining finger in the rectum.

It has been shown<sup>4, 5</sup> that 10 to 15 per cent of

patients who have carcinoma of the right portion of the colon have undergone only appendectomy within the duration of the symptoms of the malignant process. One of the cases being presented had undergone appendectomy just six weeks prior to resection. It is important to keep this in mind in doing appendectomies on older people, as an incision should be made large enough to allow a good look at the cecum. On the other hand, younger people may have a mass in the cecal area which may turn out to be inflammatory secondary to an appendiceal abscess. One should always keep in mind inflammatory lesions of the colon or terminal ileum.

In one of the cases presented the patient revealed marked anemia with weakness and fainting. When anemia is found with no definite explanation, one should look for a malignancy of the right colon. Frequently oozing is present from the raw surface of the lesion and a definite anemia is present.

In doing x-ray studies on the colon the surgeon should always inform the roentgenologist that he is looking for a malignancy. Sometimes it is necessary to do more than one study to reveal the defect caused by the tumor. Frequently the evidence of carcinoma is not shown unless the barium is seen to flow around and over the tumor.<sup>5</sup> If an ascending lesion is present in the cecum, it is frequently difficult to get barium past the defect without putting it under pressure.

In diagnosing carcinoma of the right colon one should always keep in mind the secondary adenocarcinoma of the large bowel in cases of chronic ulcerative colitis.<sup>6</sup> The primary change may take place in the right side as well as any other portion of the colon. Polyps of the right colon may also change into malignant disease. After a diagnosis of right colon malignancy is made, it is a good idea to sigmoidoscope the patient in search of other lesions in the sigmoid and rectum, as multiple lesions may occur. The patient should be prepared for bowel resection. There are many antibiotics and other drugs which have proved to be reliable. The mortality rate for colon resection has been lowered considerably in the last few years. The bowel should be cleared of fecal material, accomplished by giving mineral oil, enemas, or mild saline cathartics. Each case may present a different problem in preoperative preparation, and enough time should be spent to prepare the patient.

The most popular type of treatment now of course

\* Submitted under the auspices of the Wichita Research Foundation. From the Surgical Service of St. Joseph-Wichita Hospitals.

is wide resection of the lesion. It is usually customary to resect the terminal ileum, cecum, ascending colon, and hepatic flexure with as much blood supply and lymphatics as possible. However, in doing this one should not cause any harm to the blood supply of the remaining bowel. It is of utmost importance to visualize the right ureter and not injure the structure itself. The surrounding loose areolar tissue should not be stripped away from the ureter, and it should not be isolated. It is also wise to recognize the duodenum so there is no injury when the right colic artery is dissected and divided. If the ureter is not protected and if its blood supply is destroyed, a slough may be produced and the kidney may have to be sacrificed. An end-to-end or end-to-side anastomosis is done; either is satisfactory.

The following case histories are presented to emphasize early diagnosis and careful study and to stress the fact that lesions of the right colon are "treacherous."

Case 1, Mrs. M. F., age 39, white female, was admitted to St. Joseph Hospital in August, 1951, with an attack of right lower quadrant pain. At that time she gave a history of starting to have attacks of pain in the right lower quadrant in July, 1951. She was observed for appendicitis, a diagnosis of gastrointestinal disturbance was made, and she was allowed to go home.

The attacks of pain continued at intervals, and I first saw her on February 14, 1952. At that time she complained of a lump coming up in the right lower quadrant and of cramping pains in that location, also nausea and constipation. Upon examination a movable hard mass approximately  $2\frac{1}{2}$  inches in diameter was felt in the right lower quadrant. This was slightly tender. The remaining examination was normal. Laboratory findings revealed some occult blood in the stool, and an x-ray of the colon was reported as showing no pathology.

Surgery was advised, but she wanted to go home for a while and this she did. I saw her again in the home on February 27, and at that time she was vomiting and had the right lower quadrant pain. The mass was more prominent, and a localized distention was present. She was hospitalized and prepared for surgery. On March 3 she was taken to the operating room where a napkin ring lesion was found just above the ileocecal valve. Regional lymph nodes were involved. A wide resection was done and an end-to-end anastomosis carried out. The pathological report was adenocarcinoma of the bowel, mucoid type, with metastasis to mesenteric lymph nodes.

Convalescence was smooth and uneventful.

Case 2, Mrs. N., age 69, white female, was admitted to St. Joseph Hospital December 19, 1951.

She complained of intermittent attacks of right lower quadrant pain, nausea and diarrhea. She felt that nothing was going through her intestine. She also complained of severe distention. Approximately six weeks prior to admission she had been in another hospital where an appendectomy was done, and she was admitted to this hospital with the same complaints she had had when admitted to the other hospital.

A colon x-ray had been done prior to her operation at the other hospital. It revealed nothing of marked importance. A colon x-ray was repeated here, and findings were suggestive of a tumor mass and probably infiltration extending into the cecum and into the proximal ascending colon.

This patient was anxious for surgery as she wanted to get well so she could return to work. She was prepared for colon surgery and on December 31, 1951, was taken to the operating room where a lesion was found just above the ileocecal valve. The cecum was markedly distended, the terminal ileum was distended, and the right tube and ovary were adherent to the lesion. A wide resection was done, and the right tube and ovary were removed. Metastatic glands were found along the right colic artery, and these were removed. An end-to-end anastomosis was carried out.

Her symptoms were relieved and her convalescence was smooth. She has returned to work. The pathologist reported adenocarcinoma of the cecum with metastatic glands.

Case 3, N. J. B., age 78, white male, was admitted to Wichita Hospital May 2, 1950. He was first seen in the home, complaining of nausea, vomiting and weakness. He had fainted several times and had wanted to sleep much of the time for three to four weeks prior to admission.

Examination revealed a pale, elderly man with a smooth, oval, movable mass in the right lower quadrant. He also had a large hydrocele on the right side.

On admission his RBC was 3,250,000 with 51 per cent hemoglobin. Colon x-rays revealed a filling defect in the ascending colon. He had signs of cardiac decompensation and was treated for that condition. He was prepared for surgery and operated on May 23, 1950. A large mass was found approximately  $4\frac{1}{2}$  inches distal from the ileocecal valve. A right colon resection was done and an end-to-end anastomosis carried out. His convalescence was uneventful except for a mild phlebitis in the left leg. The pathology report was mucoid adenocarcinoma with enlarged inflammatory nodes (not metastatic).

There is no evidence of recurrence at this time.

Case 4, Mrs. B. P., age 50, white female, was admitted to St. Joseph Hospital April 18, 1952. Her main complaint was "gas." She had noticed some

soreness in the right lower quadrant for approximately three weeks, and she had discovered a lump in that area about two weeks previously. Colon x-rays were taken and revealed a suspicious tumor area in the cecum.

Examination revealed a movable tender mass approximately 2 inches in diameter in the region of the cecum. She was not anemic and appeared to be in good health. The pelvic examination was essentially normal.

After sufficient preparation she was taken to the operating room where a right colectomy was done with an end-to-end anastomosis. Enlarged glands were found along the right colic artery. The distal 8 inches of the ileum were removed. Her postoperative convalescence was uneventful, and she was dismissed from the hospital April 27, 1952. The pathological report was adenocarcinoma of the cecum, and the enlarged glands revealed only inflammation.

#### DISCUSSION

Carcinoma of the right colon should be kept in mind when examining a patient complaining of indigestion or "dyspepsia." A careful physical examination and a good history are of utmost importance in making a diagnosis. As pointed out, 10 to 15 per cent of patients with carcinoma of the right colon have had only appendectomy within the duration of their symptoms. This certainly should be kept in mind when doing an appendectomy on older people.

In the cases presented one of the patients had pre-

viously been operated on for appendicitis, and another had been placed in the hospital for observation for a gastrointestinal disturbance. One patient was first seen after he had fainted because of anemia, and the other was seen after she had noticed a lump in the right lower quadrant of the abdomen. Three of the cases presented were carcinoma of the cecum, and the other was carcinoma of the ascending colon. Some writers have advised a "second look" at some patients who have metastatic glands. The youngest of these patients may warrant such a procedure.

#### SUMMARY

1. Malignancy of the right colon is discussed.
2. The importance of early diagnosis and early treatment is emphasized. Certain technical points are stressed to prevent surgical difficulties.
3. Four selected cases have been presented to show how easy it is to overlook the disease.

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# Histoplasmosis: Review of Literature and Report of Two Sisters Having Pulmonary Evidence of the Disease

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Cecil<sup>1</sup> defines histoplasmosis as being characterized by emaciation, splenomegaly, hepatomegaly, leukopenia, anemia and irregular pyrexia. Darling,<sup>2, 3, 4</sup> in 1906, accidentally observed on microscopic examination of necropsy material some unusual intra- and extracellular oval bodies which he named *Histoplasma capsulatum* in the belief that they were protozoa similar to the causative agent of kala-azar. Three years later he reported three additional cases. In 1926, Watson and Riley<sup>5</sup> reported the fourth case, and Phelps and Mallory<sup>6</sup> reported a fifth case in the same year. In 1928, a sixth case was reported by Crumrine and Kessel.<sup>7</sup> In 1934, Dodd and Tomkins<sup>8</sup> reported the first case of histoplasmosis diagnosed before death. In the same year, DeMonbreun<sup>9</sup> was able to culture the microorganism and to classify it definitely as a fungus.

The indication at present is that the disease is not communicable from person to person; however, this point is not definitely settled. A possible method of infection constitutes: (1) dissemination by floods in the Mississippi Valley of the soil-fungus mixture, and (2) after drying, by winds resulting in airborne infection.<sup>10</sup> Emmons<sup>11</sup> reported in 1949 the presence of *H. capsulatum* in both soil and rats in an endemic area.

Histoplasmosis is found in almost every state in the union and in many foreign countries; however, the largest number of cases seems to be from the central United States, principally the Mississippi River Valley. Beadenkopf and Loosli<sup>10</sup> found from skin test surveys in this area that infection with histoplasmosis frequently exceeds 50 per cent, and in certain counties in Illinois adult young men and women have shown rates of sensitivity of over 95 per cent. Christie and Peterson<sup>12</sup> tested 344 children and young adults in the state of Tennessee: 73.2 per cent reacted to histoplasmin; 21.5 per cent reacted to tuberculin, and 53.2 per cent had interthoracic shadows interpreted as calcifications.

Clark, Tempel and Allen<sup>13</sup> studied 1,511 patients with the initial diagnosis of tuberculosis at Fitzsimons General Hospital in 1948. One hundred

ninety-two, or about 12 per cent, were found not to have tuberculosis, and of these 11 were diagnosed as having fungus infections of the lung. Furcolow<sup>14</sup> found the over-all prevalence among negroes was only 1.2 per 1,000, as compared with 4.5 per 1,000 among white children. There was a steady rise in rates among white children from 0 per 1,000 in the youngest age group to 10 per 1,000 among the age group of 16 to 18 years. Hodgson et al<sup>15</sup> found 123 recorded cases up to 1949; of these 62 had pulmonary involvement and one-sixth of the patients were under one year of age. The males outnumbered the females 2 to 1.

In another study by Absher and Cline,<sup>16</sup> of 1,000 cases of pulmonary calcifications, they found that 55.8 per cent reacted to tuberculin, 22.6 per cent reacted to histoplasmin, and 6.5 per cent reacted to coccidioidin.

Parsons<sup>17</sup> gives the most common signs and symptoms in the order of their decreasing frequency as: fever, hypochromic anemia, hepatomegaly, splenomegaly and lymphadenopathy, anorexia and loss of weight, ulceration of the oral mucosa, and various types of cutaneous lesions, with ulceration of the pharynx and larynx occurring frequently. Love<sup>18</sup> gives the cardinal findings in the full-blown infantile type of histoplasmosis as:

1. Fever, which may be of a low-grade, irregular or septic type.
2. Splenomegaly and hepatomegaly. Enlargement of superficial lymph nodes is not generalized nor prominent in infants.
3. Pulmonary involvement.
4. Skin lesions are not uncommon. Petechiae, purpuric hemorrhagic areas and ulcerative lesions are fairly common.
5. Blood count shows characteristic changes; i.e., progressive anemia, leukopenia and often thrombocytopenia.

Sontag and Allen<sup>19</sup> tested 170 children in Southwestern Ohio with serial x-rays at 1, 6, 12, 18, 24 months and yearly thereafter. Thus they were able to study the development of calcified lesions in the chest. Of these children 15.3 per cent reacted to

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tuberculin and 44.7 per cent to histoplasmin; 60.8 per cent had demonstrable pulmonary calcifications. These authors and Christie and Peterson<sup>12</sup> emphasize that the increasing incidence of pulmonary calcifications is much more rapid and far exceeds the rate of increase in positive tuberculin reactions. There is a striking similarity to histoplasmin and calcification curves, and a non-similarity between tuberculin and calcification curves. Thirty-three children with pulmonary calcification reacted neither to tuberculin nor histoplasmin, and it was assumed that other etiological factors or agents were responsible for this. One of the 33 children reacted to haplosporagin and two to blastomycin. When one pair of siblings had calcifications, the other had calcification in 43 per cent of the cases, against a normal expectancy of 37 per cent. When one sibling was negative, the other was negative in 22 per cent of the cases, against an expectancy of 15 per cent. There was no significant difference in the histoplasmin skin testing of siblings.

Studies of serial x-rays revealed that infection preceding calcification often occurs at a very early age; that there is a considerable lag between the initial soft tissue lesion in the parenchyma and calcification, a lag of two years or more between a soft tissue lesion and a hilus calcification; that the process is often a progressive one over a period of six or more years, and that calcification itself often appears early. They were unable to distinguish the calcification patterns of positive histoplasmin and tuberculin skin reactors. The majority of these children had their soft tissue changes before 48 months of age.

Parsons,<sup>17</sup> Weed,<sup>20</sup> and Miller<sup>21</sup> have described in detail the pathologic, mycologic, and postmortem findings of histoplasmosis. Briefly, the yeast-like forms of the fungus characteristically attack or are attacked by the cells of the large macrophage or reticuloendothelial system. At autopsy the organs found to be involved in order of frequency are: spleen, liver, visceral lymph nodes, lungs, bone marrow, oral mucosa, adrenals, gastrointestinal tract, peripheral lymph nodes, kidneys, and larynx. Any or all of the remaining organs may be involved.

Raftery<sup>22</sup> examined 436 appendices, comprising all cases of chronic appendicitis, lymphoid hyperplasia and normal appendices of children 16 years of age and under; 54 of these were found to contain *H. capsulatum*. All of the involved appendices were the site of marked follicular hyperplasia, and the enlarged follicles showed phagocytic mononuclear cells which contained from 1 to 20 organisms per cell.

In reviewing the clinical histories of the involved cases, it was found that all but 4 of the children showed some evidence of chronic illness. Thirty-six ran a low-grade fever during hospital stay, 30 gave

a history of recurrent abdominal pain and nausea for from 3 years to 3 months prior to surgery. Seventeen of the 23 with follow-up histories had recurrence of abdominal pain, fever, or other evidence of chronic illness. In 8 cases, x-ray revealed enlarged hilar nodes, calcification or mild diffuse infiltration. Two of the children developed lymphoblastoma within 12 months following surgery. Autopsy was refused on one, and the autopsy on the other child showed a lymphoblastic lymphoblastoma with accompanying infection of *H. capsulatum*. A brother of one of the patients died of lymphoblastic lymphosarcoma 3 months prior to his sister's surgery. Cawley and Curtis<sup>23</sup> also found a high unexplained incidence of histoplasmosis associated with lymphoblastoma.

Rawson et al<sup>24</sup> have found 19 reported cases of involvement of the adrenal glands by *Histoplasma capsulatum*. Of these, 12 showed some degree of destruction of the adrenal parenchyma, and in 9 there was massive destruction of such magnitude as to cause death. In cases of adrenal failure due to histoplasmosis, a ratio of 2 males to 1 female was found. This is the same ratio as in Addison's disease from all causes. Despite its infrequency, histoplasmosis should be kept in mind in any differential diagnosis of Addison's syndrome. Weed<sup>20</sup> reported a case of histoplasmosis in an 8-months-old infant in whom every organ and tissue was involved to some degree. In the adrenal gland the yeast forms appeared to be actually invading the cortical cells.

Miller<sup>21</sup> states that in one-half of the reported cases cutaneous or mucomembranous lesions have been found.

Hodgson et al<sup>15, 25</sup> reviewed all the reported cases to January 1, 1950. They found 138 authenticated cases. In 65 cases there was proved pulmonary involvement. There were 92 males and 39 females; ages ranged from 7½ weeks to 77 years; one-sixth were less than 1 year old. Forty-three per cent of the cases were diagnosed during life. Histoplasmin skin test was performed on 31 patients, and only 16 reacted positively. They found the skin test gave positive results on a large portion of the normal population and negative results on one-half of those with the disease, and they found it difficult to see the value of this test.

Hugh, Zwerling, and Furcolow<sup>26</sup> have studied more than 100 cases of disseminated pulmonary calcification, including miliary calcinosis in which approximately 90 per cent were positive to histoplasmin. Among these instances of disseminated calcification, 12 occurred in 6 pairs of siblings. They also found a few instances of splenic calcifications in tuberculin-negative, histoplasmin-positive children. So far, all their cases of splenic calcification involve pulmonary calcification. They could not say whether or not the



splenic calcification is evidence of disseminated histoplasmosis.

Bass<sup>27</sup> reports that "snowstorm" calcifications in the lungs, seen in some patients with histoplasmosis infection, are evidently dissemination of hematogenous origin. According to Silverman<sup>28</sup> and Parsons,<sup>17</sup> histoplasmosis has previously been considered a rare, universally fatal disease; it is now recognized as a disease of wide distribution, generally non-fatal, and often asymptomatic.

Despite the possibility that other fungi may result in histoplasmin sensitivity, a positive skin reaction in an individual with roentgen signs of pulmonary infection, who lives within the histoplasmin area, places histoplasmosis high if not first on the list of differential diagnoses. In attempting a differential diagnosis, one should remember that histoplasmosis mimics many more common diseases. It produces miliary lesions, ulcerations of the intestinal tract, and caseation necrosis which resembles closely the same lesions produced by tuberculosis. It causes enlargement of the spleen, liver, and lymph nodes such as one sees in leukemia and Hodgkin's disease. It has been confused with Banti's disease and atrophic cirrhosis. It produces ulcerative lesions of the oropharynx and larynx, and in several instances the clinical diagnosis before autopsy was carcinoma. It has been the cause of vegetative endocarditis. The leukopenia and anemia must be differentiated as to causation from aleukemic leukemia and other blood dyscrasias. In cases of extreme hypotension, histoplasmosis must be thought of as a possible cause of adrenal insufficiency. Some features of the disease closely resemble the leishmanian infections, kala-azar, cutaneous leishmaniasis, and espundia.

Zwering,<sup>29</sup> in a survey of student nurses in 10 cities throughout the country, showed a close parallel of sensitivity to histoplasmin with pulmonary calcification. There was no significant parallel with reaction to tuberculin. A distinction by roentgenography between tuberculin-positive, histoplasmin-negative calcification and tuberculin-negative, histoplasmin-positive calcification could not definitely be made. However, disseminated bilateral calcification is more frequently associated with a positive reaction to histoplasmin than with one to tuberculin. Hodgson<sup>25</sup> says there is no characteristic x-ray evidence of histoplasmosis, and it may resemble any lesion of the lungs.

Hodgson<sup>15</sup> also found 62 cases of proved pulmonary involvement in 123 cases of histoplasmosis. He found the skin test was without value to the clinician, and the complement fixation and precipitin reactions were unreliable procedures because of cross reactions with other fungi. The evidence presented by this study was that lesions (in the lungs) tend to

become calcified within a few months if healing occurs.

Three criteria have been established by Furcollow<sup>14, 30</sup> for possible subclinical cases of histoplasmosis: (1) the individual has skin sensitivity to histoplasmosis but not to tuberculin; (2) the lesion must persist at least two months; and (3) laboratory and clinical examinations must exclude the presence of tuberculosis and other conditions such as sarcoidosis or Hodgkin's disease.

He divided disseminated pulmonary calcifications into two groups: (1) Miliary calcification. These calcifications are small, round, uniform in size, numerous, and widely and symmetrically scattered throughout each lung field. This type is sometimes called "wheatena" or "buckshot" calcification. Most observers feel that the miliary type results from hematogenous dissemination of the causative agent. (2) The second group is designated multiple bilateral calcification. In these instances the calcaneous deposits are fewer in number, often irregular in outline, of varying size, and often distributed in an asymmetric pattern. This type is probably due to bronchogenic dissemination. Histoplasmosis or some closely related infection, not tuberculosis, is the cause in most cases of disseminated pulmonary calcification.

Groover et al<sup>31</sup> studied a group of 1,220 soldiers during demobilization at the end of World War II. These soldiers were skin tested with tuberculin, histoplasmin and coccidioidin. They all had roentgen evidence of pulmonary pathology compatible with that of tuberculosis. It was shown that 93.6 per cent were sensitive to tuberculin, 31.1 per cent to coccidioidin and 58.6 per cent to histoplasmin. They concluded that the test of sensitivity of the skin to histoplasmin is of limited value in the differential diagnosis of pulmonary disease.

Pratt,<sup>32</sup> in a study of 23 cases, found 11 to have *H. capsulatum* on examination of the bone marrow.

In 60 cases reported by Hodgson,<sup>15</sup> one or more cultures were made, and the organism was recovered from at least one culture in 53 of them.

Zahn<sup>33</sup> had a proved case of histoplasmosis in which the histoplasmin complement fixation test was negative. He points out that negative serological studies do not necessarily eliminate histoplasmin as the etiological agent; there may be a similar reaction as that which occurs in quiescent coccidioidal lesions in which the complement fixation tests are usually negative.

Treatment: There is no known cure for the average case of histoplasmosis. Penicillin<sup>34</sup> has been tried without success. Seabury<sup>25</sup> reports treating two patients with stilbamidine (as used in kala-azar and trypanosomiasis), which gave a temporary improve-



ment but did not modify the course of the disease to a significant degree.

Hodgson<sup>15, 25</sup> reported two cases of pulmonary histoplasmosis which were apparently cured by lobectomy.

Recently, Christie et al<sup>36</sup> have used ethyl vanillate with better results than any drug or treatment yet tried. They treated 12 consecutive, culturally proved cases of histoplasmosis, representative of the progressive disseminated form of the disease. Five of these patients survived and have continued well.

#### CASE HISTORIES

F. N., a girl of 18, was born in Argyle, Iowa, moved to La Plata, Missouri, in 1937, thence to Strong City in 1942, and finally to Newton in 1945. She had had the usual childhood diseases and occasional colds. She was first seen in the office in November, 1950, complaining of pain in the lower right chest upon deep breathing. There was no temperature, no physical findings. It was thought this was pleurisy, and a routine chest film was taken. The chest x-ray showed multiple, discrete, widely scattered calcified areas in both lung fields. A further study of this girl and the other members of the family was done at the time the positive x-ray findings were discovered. Past history shows a chest x-ray taken in 1948 and again in 1949 by the state in a survey of school children. Both were reported negative. Skin

tests at this time were histoplasmin\* weak and tuberculin negative.

At the time of the present study urinalysis was negative, hemoglobin 12.8 gms., RBC 4,230,000, WBC 5,000, polys 74, lymphs 26. Sedimentation rate was 18 mm. Serology was negative, and agglutination for typhoid "O" and "H," paratyphoid A and B, brucella, Weil-Felix reaction and *B. tularensis* were all negative. Gastric washings were negative for acid fast bacilli on both smear and culture. Skin tests showed histoplasmin 4 plus, tuberculin negative, coccidioidin negative. Complement fixation test for histoplasmosis was negative. Serial x-rays taken since, over a period of one year, have shown no change from that in the original film. She has remained in good health (Figures 1 and 2).

L. N., a sister, is a girl of 19, born in Argyle, Iowa. She moved to La Plata, Missouri, in 1937, then to Strong City in 1942, to Newton in 1945. She had had the usual childhood diseases of measles, mumps, pertussis, and chicken pox, but no other illness until she moved to Kansas and started to have almost continuous head colds. Aside from these colds she had never been ill and had never run a temperature above normal to her knowledge. In 1948 and 1949 her chest x-rays in a survey of school children were reported negative. Skin tests at this time were tuber-

\* Histoplasmin and coccidioidin material for skin testing and the complement fixation tests for histoplasmosis was furnished by Dr. M. L. Furcolow, United States Public Health Service, Kansas City, Kansas.

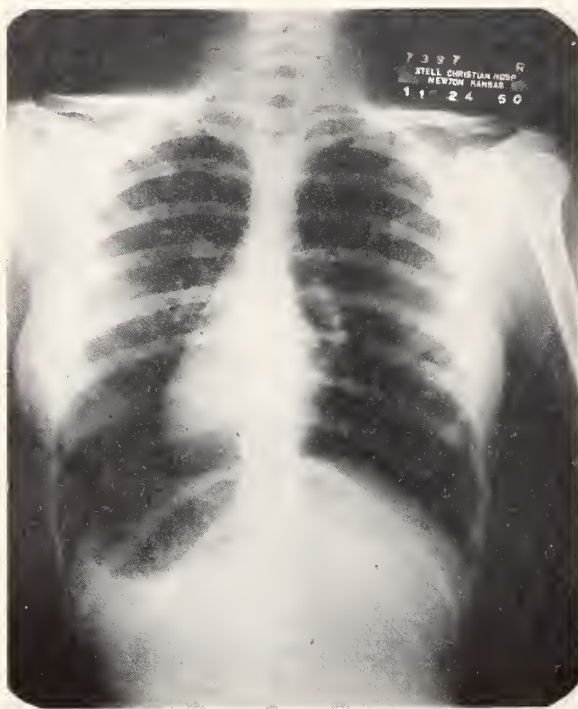


Figure 1. F. N., November 24, 1950.

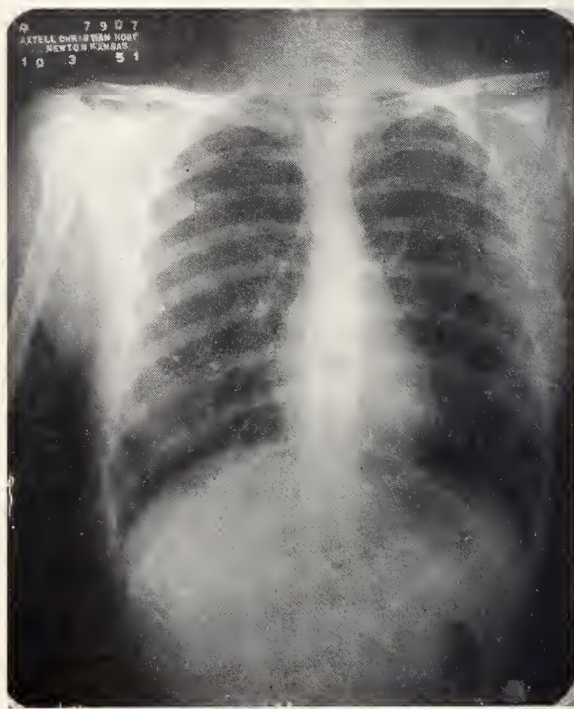


Figure 2. F. N., October 3, 1951.

culin negative and histoplasmin positive. In 1950, for this study, chest x-ray showed multiple, widely scattered, discrete, calcified areas in both lung fields. Skin tests were: histoplasmin 1 plus, tuberculin negative, and coccidioidin negative. A gastric washing was done in which concentration smear and culture were negative for acid fast organisms. Serology was negative. Agglutinations were negative. Hemoglobin was 11.6 gms, RBC 4,230,000, WBC 6,100, 60 per cent polys, and 40 per cent lymphs. Sedimentation rate was 22. The complement fixation test for histoplasmosis was reported negative. Serial chest x-rays for a period of one year have shown no change over the original (Figures 3 and 4).

A. N., a brother, was 14. Born in La Plata, Missouri, he moved to Strong City in 1942, then to Newton in 1945. He had had the usual childhood diseases, tonsillitis and adenoiditis at eight years of age, otherwise was never sick. In 1949 a chest x-ray was taken by the mobile unit of the state tuberculosis control division in a survey of school children and was reported negative. A skin test at this time was reported tuberculin negative. Histoplasmin was weak positive. In 1950, for this study, the skin test was histoplasmin negative, tuberculin negative, coccidioidin negative. The chest x-ray showed two small calcified areas near the base of the right lung. Complement fixation test for histoplasmosis was reported negative. A repeat x-ray three months later revealed no change.

L. N., a brother, 16, was born in Argyle, Iowa.

He moved to La Plata, Missouri, in 1937, to Strong City in 1942, thence to Newton in 1945. At seven years of age he had had a severe sore throat; following this weakness developed in one leg, and a diagnosis of polio was made. He has completely recovered. At nine years of age he had a mastoid operation and an appendectomy shortly thereafter. At 10 years of age he had tonsillitis and adenoiditis. In 1948, and again in 1949, he had chest x-rays taken in a state survey of school children, and they were reported negative, as were also the skin tests for histoplasmosis and tuberculin. In 1950, for this study, chest x-ray was negative, but the skin tests were histoplasmin 2 plus (3 plus in 72 hours), tuberculin negative, and coccidioidin negative.

The father, Mr. N., was born in 1904 in Argyle, Iowa. He had had the usual childhood diseases. In 1939 he spent about one year in the San Joaquin Valley. He was in San Diego in 1942-43. He had hernia repair in 1942 and cholecystectomy in 1945. Otherwise, he had always been in good health. Skin tests in December 1950 were: histoplasmin 3 plus, tuberculin negative, and coccidioidin negative. Chest x-rays were negative at this time.

The mother, Mrs. N., was born in 1912 at Fort Madison, Iowa. She moved to Argyle, Iowa, at four or five years of age. In childhood she had the usual diseases, except mumps which she had with her children. She had had scarlet fever in early childhood, and an appendectomy in 1939, but no other illness. Skin tests in December 1950 were: histoplasmin 2

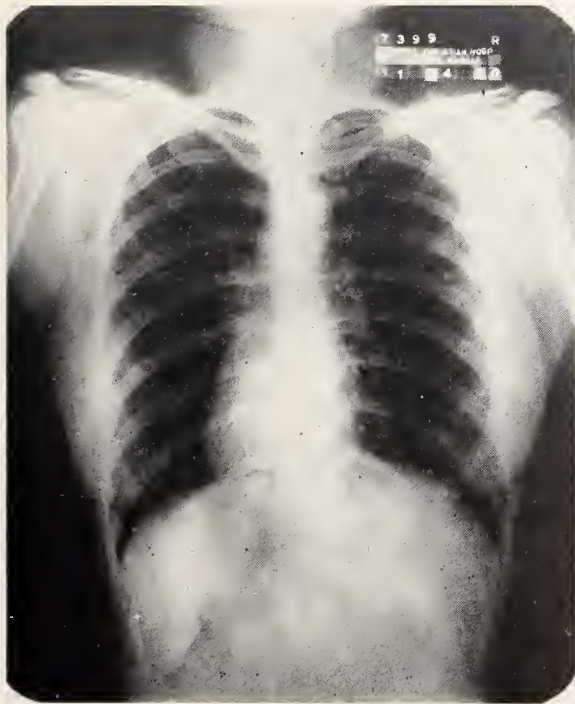


Figure 3. L. N., November 24, 1950.

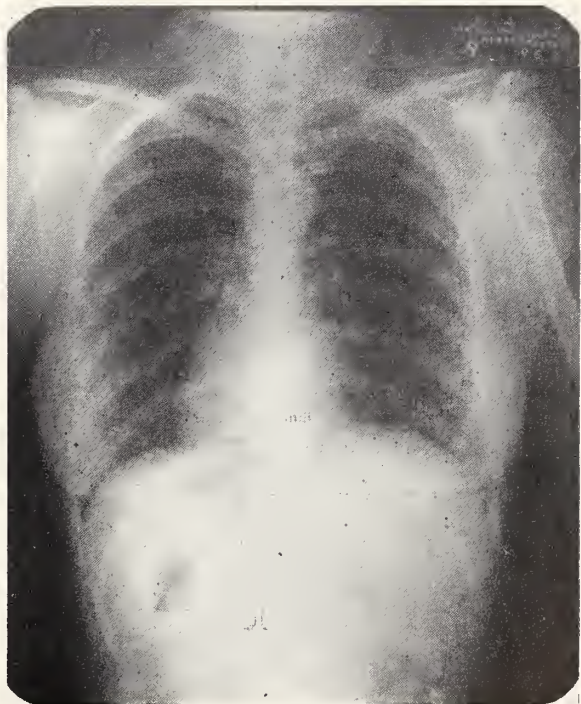


Figure 4. L. N., August 4, 1951.



plus, tuberculin 1 plus and coccidioidin negative. Chest x-rays were negative.

### CONCLUSION

1. A brief review of the literature concerning histoplasmosis and a bibliography have been assembled.

2. Cases of histoplasmosis in two sisters in the same family have been presented. While these cases have not been proven by culture or by a positive complement fixation test for histoplasmosis, they nevertheless fit the three criteria established by Furcolow and referred to in this paper, and must be considered cases of the miliary calcification type, asymptomatic, and probably healed.

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# The Significance of Solitary, Asymptomatic, Intrathoracic Coin Lesions \*

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Kansas City, Missouri

Forty years ago when Adler published the first monograph on bronchiogenic carcinoma, he could find in the world's literature only 374 cases and apologized for writing about so rare a condition.<sup>9</sup> At present, this same disease is believed by some to be the most common visceral cancer in men,<sup>9</sup> constituting 6 to 10 per cent of all neoplasms.<sup>12</sup> The increased incidence of malignant pulmonary disease and its frequently incurable nature by the time symptoms are noticed make the early detection of pulmonary carcinoma of vital importance to every practitioner.

Evidence is now ample to suggest that asymptomatic pulmonary coin lesions may be the first evidence of significant intrathoracic disease, including bronchiogenic carcinoma. Such pulmonary densities are usually discovered in mass x-ray surveys, in casual fluoroscopic examination of the chest during gastrointestinal studies, or in chest x-rays taken as part of a routine physical examination. Yet because these lesions are unaccompanied by symptoms and occur in apparently healthy individuals, there is a tendency to regard them either with indifference or with an attitude of watchful waiting. Either attitude may be detrimental and, indeed, fatal to the patient.

The term "coin lesion" is used to describe a roughly spherical, well-circumscribed intrathoracic nodule seen on roentgenographic examination. Such lesions may be solitary or accompanied by other evidence of pulmonary disease, and may be symptomatic or asymptomatic. Somewhat arbitrarily, perhaps, the following discussion will be concerned only with those spherical densities which are solitary and asymptomatic.

## DIAGNOSIS

Because such densities often represent malignant disease at its inception, it is imperative that they be recognized as significant lesions requiring immediate diagnosis. The possibility of carcinoma, tuberculous disease, fungous infections, abscesses, cysts, and benign tumors must be kept in mind. Diagnosis is usually difficult. Even when the physician exploits

all his tools, an exact diagnosis often can be made only by recourse to an exploratory thoracotomy. Because time is so important a factor in the curability of cancer, the diagnosis must be arrived at promptly.

A careful clinical history must be taken, with particular attention to occupation, geographical areas occupied, and possible contact with active tuberculosis. Age is of less importance than might be supposed, for the occurrence of pulmonary carcinoma in individuals under 35 is not rare, nor is the occurrence of benign pulmonary lesions in those over 50.<sup>13</sup>

Physical examination rarely reveals signs of pulmonary involvement but may suggest malignant disease of extra-pulmonary organs. Solitary metastatic lesions of the lung, though rarer than solitary primary lesions, do occur, and the discovery of carcinoma in another organ suggests that the lung is already inoperable.

Roentgenologic examination, including fluoroscopy, laminography, bronchography, angiography, and serial observation, is perhaps the physician's best diagnostic aid. However, it bears emphasis that there is no definite roentgenographic pattern for pulmonary carcinoma and no criterion which will always enable the examiner to deduce the etiology of a roentgenographic density.<sup>9, 12, 14, 15, 18</sup>

Fluoroscopy will show shift of a lesion, diaphragmatic movement, and sometimes a fluid level within cavities. It also occasionally allows the accurate diagnosis of an intrathoracic fistula.<sup>12</sup>

Laminography is of value in localizing the lesion, in presenting areas of calcification, in showing cavitation, and sometimes in disclosing arteriovenous fistulas. The presence of calcium in the lesion may be considered as strongly supporting the diagnosis of a tuberculous or histoplasmic lesion or of a pre-malignant process such as a chondroma or dermoid cyst.<sup>2, 12</sup> Caution must be exercised in arriving at such a diagnosis, however, since calcification within a malignant lesion is not unknown. The absence of calcification carries little diagnostic import, for many tuberculous lesions do not present calcific areas roentgenographically, although they may be shown to have such areas grossly.<sup>3</sup> Cavitation can usually be seen where it exists grossly,<sup>3</sup> but it occurs in both malignant and benign lesions. Cavities within malignant processes are usually ragged in outline, while those

\* This paper written while the authors were serving as externs at the Halstead Hospital, Halstead, Kansas. They are now junior students at the University of Kansas School of Medicine.

\*\* The authors wish to express their appreciation to Dr. Charles Pokorny of the Hertzler Clinic, Halstead, Kansas, for his valuable aid and advice in the preparation of this paper.

within benign lesions present a smooth contour, but an accurate differentiation cannot always be made on this basis.

Bronchography may demonstrate the presence of bronchiectasis or of a bronchial block. It must be realized, however, that bronchography cannot reveal the etiology of the space-occupying lesion and that its failure to show a bronchial block in no way rules out the diagnosis of bronchiogenic carcinoma.

Angiocardiology has occasionally successfully visualized an arteriovenous aneurysm.<sup>18</sup>

In rare cases the physician will have access to chest x-rays taken several years before the one in question. If the lesion has remained stationary during this period, the physician can afford to be less concerned about malignancy, but under no circumstances is the physician justified in waiting to obtain serial x-rays in order to observe a change in size. An increase in size is not diagnostic, for it occurs in tuberculous lesions and suppurative processes as well as in malignant disease. Conversely, the fact that a lesion remains stationary is not diagnostic of a benign condition, for cases of malignant pulmonary lesions which have remained stationary for several months have been reported.<sup>7, 8, 16, 18</sup> Often it is in this period of cautious watchfulness that an operable lesion becomes inoperable.

One other roentgenographic pitfall is to be avoided. There is a strong temptation for the practitioner to label small, asymptomatic pulmonary lesions as "atypical" or "virus" pneumonia, treat the patient with antibiotics and take another chest x-ray one to three weeks later. On finding that the shadow has decreased in size, he may feel that his diagnosis is confirmed, prescribe more antibiotics, and become ill-advisedly complacent.

The significance of a pulmonary shadow caused by neoplasms should be recognized. Only rarely does x-ray outline the shadow of the tumor itself<sup>9</sup> and far more often is the density representative of the atelectatic result of neoplastic growth. Where atelectasis exists, infection is not slow to follow. It is in this way that the administration of antibiotics to individuals harboring malignant pulmonary neoplasms may diminish roentgenographic evidence of the tumor, at the same time having no effect on the fundamental disease process. The decrease in size of a pulmonary shadow after administration of antibiotics must never be considered conclusive proof that the pulmonary disease which exists is infectious in origin.<sup>12</sup>

Skin tests for tuberculosis, histoplasmosis, coccidiomycosis, blastomycosis, and echinococcus disease are respectable tools in the physician's armamentarium,<sup>16</sup> but they cannot be relied upon as accurate indicators of the etiology of a coin lesion. Although some investigators<sup>2</sup> feel that a positive skin test in the ab-

sence of other pertinent findings is sufficient to warrant observation rather than exploration, others demur.<sup>5, 16</sup> Certainly cases of concurrent active tuberculosis and pulmonary carcinoma have been reported,<sup>12</sup> and a positive skin reaction to tuberculin in the presence of bronchiogenic malignancies is not rare. Probably the safest course in such instances is to regard the coin lesion as a probable malignancy unless several findings are suggestive of some benign process.

Bronchoscopic examination and the study of bronchial aspiration are probably of little value. Negative findings are the rule because of the peripheral location of many of the lesions.<sup>13, 15, 16, 18</sup> Similarly, the finding of malignant cells in bronchial washings is usually diagnostic, but negative findings, which are most frequent, are valueless.<sup>13, 18</sup>

Examination of the sputum and gastric aspiration for the presence of tubercle bacilli, fungi, or malignant cells is probably of some value, but only occasionally is it in itself diagnostic.<sup>15</sup> Time should not be lost waiting for results of guinea pig inoculation or bacterial cultures.<sup>14, 16, 18</sup>

Aspiration biopsy of coin lesions is both difficult and dangerous and has been discarded by most practitioners as a diagnostic method.<sup>12, 14, 18</sup>

By demonstrating a layer of air between the chest wall and the lung parenchyma, a diagnostic pneumothorax can be helpful in distinguishing between intrathoracic extrapulmonary, and intrathoracic intrapulmonary lesions.<sup>5, 12</sup>

Blood counts and chemistry, serologic studies, and agglutination tests are rarely diagnostic when considered alone but may be helpful.

In summary, positive tests can be suggestive and sometimes diagnostic of the existence of a particular disease, but there are no tests which can prove the absence of a malignant process.<sup>18</sup> Even with the exercise of great diagnostic acumen, the physician will often be unable to arrive at a diagnosis by conservative methods and will be forced to resort to an exploratory thoracotomy. The alternative is watchful waiting in a situation where time may be of the essence.

#### MANAGEMENT

There are some exceptions to the general rule of exploration for all undiagnosed pulmonary coin lesions. Advanced age, markedly decreased respiratory function, and the presence of debilitating disease may make the risk and disadvantages of exploration outweigh the advantages.<sup>18</sup> Where serial x-rays reveal that a lesion has remained stationary for several years, there is no need for immediate exploration and possibly little advantage in eventual exploration. Finally, some investigators feel that the demonstration of calcification within a pulmonary lesion



is evidence sufficient to make thoracotomy unwarranted.<sup>1, 18</sup> Others, while agreeing that calcification almost always indicates a benign lesion, feel that these should be removed prophylactically, particularly when there is a reasonable suspicion of tuberculosis.<sup>3, 16</sup> With these possible exceptions, the exploration of all undiagnosed pulmonary coin lesions would appear to be the method of choice.

The risk which such a major surgical procedure carries with it is small with present-day techniques of anesthesia and surgery. In a series of 16 cases, Effler reported no operative mortalities and two postoperative complications.<sup>7</sup> One of these was a mild thrombophlebitis; the other, subcutaneous emphysema. Effler, Blades, and Marks report a series of 24 cases with a mortality and morbidity rate of 0 per cent, and they state that there is an expected mortality rate of less than 1 per cent.<sup>8</sup> Certainly mortality and morbidity rates are low—so low that exploratory thoracotomy now belongs with exploratory laparotomy as the procedure of choice in the management of undiagnosed but possibly dangerous conditions. And while the risks are low, the stakes are high, for bronchiogenic carcinomas occur with 10 times the frequency of benign pulmonary tumors.<sup>5</sup> Here, as in other conditions where cancer is suspected, the more drastic procedure is, in final analysis, the more conservative.

Interesting in this connection is the experience which Abeles and Ehrlich report.<sup>2</sup> In a series of silent coin lesions studied, 31 were undiagnosed, and exploratory thoracotomy was advised. Ten of the patients were not operated upon, three of them refusing operations because they were asymptomatic. Six of the 10 refused operations on advice of their family physicians, who counseled a "watch and wait" policy. One other patient was hospitalized and, after negative bronchoscopy, was referred to the outpatient department. This patient was later shown to have advanced pulmonary carcinoma. Of the nine remaining, four have been proved to have had pulmonary cancer.

While granting that the removal of malignant growths is highly desirable, the conscientious physician will be concerned about the percentage of patients he will have subjected to undesirable surgery. The number is small. Some of the benign lesions, such as adenomas and chondromas, are pre-malignant and undoubtedly should be resected in most cases. Many more of the resected lesions are tuberculomas and, because tuberculomas often harbor myriads of tubercle bacilli and are often refractory to medical therapy, the consensus is that surgical excision is the treatment of choice.<sup>3, 5, 8</sup>

Cases are not rare in which an apparently well-calcified and innocuous tuberculoma has remained stationary for years, only to act later as a center from which thousands of tubercle bacilli are diffused

throughout both lung fields. Usually only excision can protect the patient from such explosive spread of his disease. For similar reasons, the surgical excision of localized tuberculous infection is the ideal treatment. Cysts, abscesses, and aneurysms, too, are best treated by surgery.<sup>5, 19</sup> Brewer, Jones, and Dolley, reporting a series of 30 cases of non-malignant intrathoracic lesions simulating bronchiogenic carcinoma, felt that "in 23 . . . cases . . . cure could not be expected by conservative treatment; six cases fall in a borderline group; one was hopeless regardless of treatment employed."<sup>5</sup> Fungous granulomas appear to be the only common intrathoracic lesions in which the desirability of resection is in serious dispute.<sup>2</sup>

The method employed at surgery varies somewhat with the surgeon. Sharp and Kinsella recommend that the biopsy be taken by means of a wedge resection rather than a local enucleation. The former possesses the advantage of less contamination when one is dealing with an abscess or tuberculoma. Depending upon the biopsy report, a subsegmental or segmental resection, a lobectomy, or a pneumonectomy is performed. If the lesion is malignant, the mediastinal lymphatics should be excised insofar as possible.<sup>12</sup> At the conclusion of the operation the chest wall is so reconstructed as to allow a maximum of respiratory function postoperatively.<sup>14</sup>

## RESULTS

Table 1 shows the final diagnoses of 137 cases of solitary asymptomatic pulmonary coin lesions; 131 of

TABLE 1  
FINAL DIAGNOSES OF 137 CASES OF ASYMPTOMATIC COIN LESIONS

Final Diagnosis	Series					Total
	A (16)	B (18)	C (8)	D (2)	E (7)	
Bronchiogenic carcinoma	11	6	1	5	6	29
Tuberculoma		7	6	5		18
Tuberculosis, proven	6				8	14
Granuloma, undetermined etiology	10	3				13
Bronchiogenic cyst	6*		6			12
Hamartoma	5	2	1		1	9
Metastatic carcinoma	3	2	1	1	1	8
Tuberculosis, suspected	5					5
Bronchial adenoma	2	2		1		5
Fibroma	2	1				3
Abscess				2		2
Chondroma	1			1		2
Neurofibroma			1	1		2
Pericardial cyst		1		1		2
Lymphosarcoma	1		1			2
Diaphragmatic hernia			2			2
Bronchiectatic cyst				1		1
Arteriovenous aneurysm		1				1
Lipoid pneumonia				1		1
Neurofibrosarcoma			1			1
Fibrosarcoma of pleura				1		1
Echinococcus cyst	1					1
Thymoma				1		1
Caseous lymph gland			1			1
Cavernous hemangioma			1			1
Number of Cases in Each Series	53	25	22	21	16	
Total Number of Cases						137

\* Two additional cysts were included in this series, but were symptomatic (bleeding).



the cases were subjected to exploratory thoracotomy. Twenty-nine, or 21.2 per cent, were found to be bronchiogenic carcinoma and 2.9 per cent sarcomas. Another 11.7 per cent were pre-malignant lesions (hamartomas, chondromas, and adenomas). A total of 35.8 per cent of the patients, then, were harboring malignant or potentially malignant lesions. Proved or suspected tuberculous lesions constituted another 27 per cent of the cases.

Mortality rates for all series are not available, but for those reported<sup>7, 8</sup> are zero.

A significant number of survival rates for explored cases of silent malignancies have not yet been reported. It is logical to assume, however, that the five-year survival rate in such instances will exceed that of any other internal cancer.<sup>14</sup> With such desirable prospects and such low mortality rates, hesitancy on the part of the physician in recommending surgical exploration of undiagnosed coin lesions appears unwarranted.

#### SUMMARY

Bronchiogenic carcinoma now constitutes six to ten per cent of all neoplasms.

Coin lesions, which are roughly spherical, well-circumscribed, intrathoracic nodules seen on roentgenographic examination, often represent malignant disease at its inception. It is imperative that they be recognized as significant lesions requiring immediate diagnosis.

Diagnosis must be arrived at promptly. When malignant disease cannot be ruled out, proper management consists of an exploratory thoracotomy.

Excepted from this generalization are patients of advanced age or debility, patients whose lesions have remained stationary for several years, and patients whose lesions show calcification.

The expected mortality rate in thoracotomies for undiagnosed asymptomatic coin lesions is less than one per cent.

Most of the benign lesions found at thoracotomy are best treated by surgical excision.

A composite of five series, consisting of 137 cases, reveals 25 different diagnoses. Of these cases, 21.2 per cent were bronchiogenic carcinomas, 2.9 per cent were sarcomas, 11.7 per cent were pre-malignant lesions, and 27 per cent were proved or suspected tuberculosis.

It is reasonable to expect the five-year survival rates of these asymptomatic cases of bronchiogenic carcinoma to exceed those of any other internal cancer.

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## THE KANSAS PRESS LOOKS AT MEDICINE

### Toward Better Medical Care

Dr. Louis H. Bauer, president of the American Medical Association, has outlined a thorough-going program for what he terms "the preservation of our American system of medicine." His constructive points, which are directed to all physicians and to all component societies of the A.M.A., include:

Work with rural communities to establish facilities for physicians, so that we shall have a better distribution of physicians.

See that good medical care for the indigent is available everywhere.

Extend public health coverage to areas lacking it, and develop plans for the care of the chronic invalid.

Expand our voluntary health insurance program, not only to cover more persons, but to cover those over age 65 and those suffering from illnesses of long duration.

See that the public is protected so that it can always obtain the services of physicians.

Revitalize our county health societies and make them leaders in their communities in all health matters.

Here is the positive answer to those who have attempted to delude the lay public into believing that the only solution to expanding and improved medical service, is socialized medicine. The fact is this country has seen greater progress in medical care under private medical initiative than any other major nation—and the medical fraternity is giving endless thought and concrete effort to making it still better.

—*Clark County Clipper, February 19, 1953.*

### Federal Health Assistance

Four New England Republican members are sponsoring measures in Congress providing federal aid to states to finance voluntary, prepaid health service plans.

The phrase "socialized medicine" seems to be staying on, though the New Deal has departed. But the term should not be used carelessly. Present legislation does not contemplate compulsory health insurance. It seeks to provide "adequate health care in a manner consistent with our country's traditions of freedom." It would offer "the maximum of assistance with a minimum of governmental interference."

Primary responsibility for development of adequate

health services is placed on the states and local communities.

Whether you call it "socialized medicine" or not, federal funds are being used in increasing amounts for medical service. The senate labor committee in 1951 called the Veterans Administration medical care program one of the largest in the world. Because the V.A. cares for non-service connected cases, together with service-connected cases, the potential for growth is very great. . . .

It is the author's opinion that the most needed items for extension of health legislation are federal aid to medical education, integration of federal medical services and a program for cooperation between the federal medical establishment and local or regional health plans, whether voluntary or governmental. . . .

The legislation introduced by Senators Ives and Flanders and Representatives Javits and Hale is similar to that introduced in 1952. Some aid also is provided for training doctors and nurses, and for building diagnostic centers.

The new administration is opposed to compulsory health insurance but favors the principle of federal assistance to health programs. Hence, something constructive may come of the legislation this session.—*Kansas City Kansan, March 5, 1953.*

### CANCER CONFERENCE DRAWS 300

Approximately 300 physicians attended the Fifth Annual Mid-West Cancer Conference held at Wichita, April 2 and 3, under the auspices of the Kansas Division of the American Cancer Society. Although most of the registrants were from Kansas, a check of attendance showed that physicians were also present from Oklahoma, Colorado, Nebraska, Illinois, and Missouri.

The scientific program followed the outline published in the March issue of the JOURNAL. The program for the banquet, however, was changed because of the illness of the scheduled speaker, Dr. Cornelius P. Rhodes of New York. A substitute speaker, who graciously accepted a late invitation, was Mr. Mefford Runyon of New York, executive vice president of the American Cancer Society.

Dr. Karl E. Voldeng, Wellington, who took office as president of the Kansas Division in March, presided at the banquet session. Dr. Voldeng is now filling the unexpired term of office of Dr. Charles H. Miller, Parsons, who resigned because of illness in his family.

Good public relations for the medical profession begins in the office of each individual physician.



## PRESIDENT'S PAGE

Dear Doctor:

Tonight, just two weeks before I officially become your president, I am writing the first of those twelve pages that it seems your president is "entitled" to write. In trying to think what to say, my mind takes me back many years when, as one of a group of small boys, I stood stark naked on the ice-fringed banks of the Neosho River preparing to initiate the swimming season. We were half afraid to jump in, not only because of the shock of the icy water, but also because of the shock of the paddle, should our fathers get wind of our brave venture.

Just as then, I am now shivering at the thoughts of the responsibilities of the coming year. I can only hope that I may be as politic, as wise and as consistently a gentleman as those of your presidents who have preceded me. It has been my privilege, and a personal honor indeed, to have been closely associated with the past six presidents of our Society. To them I shall look for guidance and counsel.

During the past two months, your president, with the aid of Oliver Ebel and others, has spent considerable time and thought in selecting the committee chairmen and members for the coming year. The committee roster was published in the April issue of the JOURNAL. It was my hope that each committee could have its first meeting during the annual session.

Before action of the House of Delegates, I am unable to say some of the things that are uppermost in my mind. Future pages will cover some of those things in detail.

May I ask each and every one of you for your co-operation, counsel, and forbearance. May I thank you for this great honor that you have so generously given me. And may I have the forethought, the wisdom, and the ability to co-ordinate your work and ideas so that we all may make this another progressive year for the Kansas Medical Society.

A handwritten signature in cursive script, reading "Lucien R. Fyfe". The signature is written in dark ink and is positioned at the bottom of the page, below the main body of text.

## EDITORIAL COMMENT

### THE 1953 KANSAS LEGISLATURE

An exceptionally confusing session of the Kansas legislature was concluded during the first week in April. Side issues, particularly the work of a special investigating committee, produced a tone of unrest that permeated the entire session and undoubtedly influenced the legislative process. The effect of this condition was noticeable in many areas of activity and certainly created situations uncommon in past legislative sessions.

In the health field the final outcome was not substantially affected, except that some items of needed legislation were lost which might otherwise have carried. The following brief summary is a partial review of the most important health measures that were considered by the 1953 Kansas legislature.

During the November elections, the people voted an additional tax levy, outside the aggregate, for the purpose of operating mental hospitals. The Kansas legislature, empowered by the referendum, set up a small tax levy and created the position of director of institutions under the State Board of Social Welfare, whose responsibility it shall become to coordinate the programs of all mental hospitals in Kansas. This is the culmination of previous experimental legislation to improve the operation of these institutions. Now, for the first time, they will be operated as one service unit.

Another medical welfare problem concerned the establishment of a tuberculosis sanatorium for south-east Kansas. The Legislative Council, having studied the problem for the past three years, presented the legislature with a recommendation that such a hospital is necessary. There followed, during the early weeks of the session, a flurry of activity whereby numerous bills were introduced attempting to locate this hospital in various places within that territory. The resulting confusion almost defeated the entire project, and might have done so, had not all proponents finally agreed to a compromise and permitted all previous bills to be killed. Final action created a commission which is directed to establish a location within the nine southeast Kansas counties for the creation of a tuberculosis hospital.

Another welfare measure with medical interest is the adoption of a resolution directing the Legislative Council to conduct a two-year study on the problems of aging. This involves many areas such as employment, recreation, security, and also includes health. The Legislative Council is authorized to request the assistance of the Kansas Medical Society for consideration of that phase of the study.

Numerous public health measures were introduced. A request to construct a public health laboratory in Topeka was defeated, and the Legislative Council was directed to study this question. Defeated also was a uniform narcotics act. Several public health measures passed, of which two are of principal importance to the medical profession. A new law covering quarantine and the reporting of contagious diseases modernized the old statute to comply with present concepts of contagious diseases. The second was a pure food and drug act which empowers law enforcement agencies, including the Kansas State Board of Health for the first time, to impound adulterated food, drug, and cosmetic products.

Many associations had bills introduced revising their practice acts. Included were funeral directors, dentists, optometrists, and pharmacists. Most of these were successful, at least to a degree. The Kansas State Board of Medical Registration and Examination had introduced a bill raising the annual registration fee from the present \$1.00 to a possible \$5.00. This passed and will become law on July 1 of this year. That bill also made possible the increase of per diem expenses of the board and increased the secretary's salary. In general, this was about what was attempted by the other professional boards. There are some exceptions in that optometry requested additional judiciary power over its members and, with minor amendments, succeeded.

In the above category the bill having the stormiest experience was introduced by the Board of Pharmacy. Only a minor flurry was created in the House, but the Senate introduced and passed numerous amendments reducing the authority of this board. Unchanged were sections that increased the registration and license fees. The principal controversy came during the final days of the session with an amendment designed to give osteopaths the right to use drugs. Shortly before adjournment, this amendment was removed, and the pharmacy bill then passed without further dissent.

For some 20 odd years the osteopaths in Kansas have regularly attempted to set aside existing decisions of the courts by revising their practice act, and this session was an exception only because they tried to accomplish this in so many different ways. The osteopaths attempted first to create a composite board and thereby obtain the right to be examined and, if successful, to use drugs and to practice surgery. This was shortly replaced by a second proposal whereby the Board of Osteopathic Examiners would be authorized to issue two types of license, one to the osteopathic physician who would use drugs and practice minor surgery, and the other to the osteopathic physician and surgeon who would be licensed to perform major surgery. Identical bills on this subject were introduced in the House and in the Senate. Following



committee hearings, the House substituted the material for this bill and passed out of committee in its stead a short bill merely stating that osteopathic physicians should be given the right to use all drugs and chemicals in the practice of the osteopathic concept of treatment of disease. This bill was permitted to die on the calendar, and the Senate bill died in the committee. Following this action, the amendment to the pharmacy bill was introduced, and that ultimately became the object of considerable controversy before finally being disposed of as described above.

In the final hours of the session, a resolution was passed requesting the Kansas Medical Society and the Kansas Osteopathic Society to resolve their differences in the next two years, and making available to these associations the services of any state agency for this purpose.

### THE DOCTOR DRAFT

The present special doctor draft law expires on June 30, 1953. Senator Saltonstall, chairman of the Senate Armed Services Committee, and Senator Hunt introduced a bill on April 1 revising this act and extending it to July 1, 1955. At the time this is written, hearings have not yet been held, so provisions that will ultimately be contained cannot be predicted. Below, however, is a review of this legislation in the form in which it was introduced.

This bill retains the four existing priorities and leaves the order in which physicians are liable for service approximately as it was, with younger men in Group 3 going first and, when Group 4 is reached, declaring that those with least service are the first to be called. This new bill recognizes for service credit time spent in the armed services of other nations who fought on the side of the Allies. It retains 24 months as the required period of service, and the maximum induction age is kept at 51. A change of less general importance is that aliens are now made subject to service.

There are a number of important differences between the proposed new law and that which is currently in effect. One of these is the required length of service. As stated above, this is for 24 months except that physicians who have served 12 months or more since June 25, 1950, cannot be called again. Reserves who have served 12 months or more since September 16, 1940, but not in the period since June 25, 1950, could be required to serve not more than 17 months. This makes a preferential distinction for the doctor who has served in the Korean conflict.

Another difference is the liberalization of the commissioning procedure whereby appointment shall be made to such "grade or rank as may be commensurate with his professional education, experience, or abil-

ity." This is of importance because it specifically changes a section of the present act which declares that no person who has not held a previous commission receive a grade higher than major or lieutenant commander.

However, the \$100 bonus is left out of the present act. There appears to be some feeling on this subject because a special five-man Defense Department commission examining military differential pay reports specifically against this practice. This commission recommends that those who genuinely volunteer for more than the required time should be given excess pay from the beginning of their active duty, but not a person serving only what is required of him. Just what this means is not clear at the moment, but there is no doubt that opposition has arisen to the continuation of the present practice. The A.M.A. Council on National Emergency Medical Service interprets it to mean the withholding of this additional benefit to all commissioned officers serving 24 months or less.

Other features include a clause providing that unless an officer was in the reserve prior to September 9, 1950, his commission would automatically terminate upon the completion of his active duty. As now written, no provision is made for the retention of this commission even if the physician should wish to remain in the reserves. And, finally, the National Advisory Committee, together with its state committees, is retained. According to the new bill, they will again be empowered to defer physicians in residency training programs.

All the above, of course, is tentative because the bill has not yet been discussed, nor has any action been taken on it. It is quite possible that considerable changes may be made even before this issue of the JOURNAL is distributed. So interested physicians are advised to watch for other announcements which may supersede this information.

### WEIGHT REDUCTION

A casual study of journals, newspapers, magazines, and pamphlets published in recent months indicates that weight reduction is one of the most popular subjects with today's readers. By referring to a number of such articles, the JOURNAL has compiled statistics and comments on several aspects of the matter.

Publications of the American Medical Association have carried numerous articles on the subject. One listed five D's as hazards to which obesity leads: disfigurement, discomfort, disability, disease, and death. The article mentions, however, five useful purposes of normal amounts of fat: (1) as a reservoir for food to be used in time of need; (2) as padding or shock absorbing material to protect organs against undue shock or vibration; (3) as a means of maintaining

warmth; (4) as providing for the normal contour of the body, as well as the smoothness and elasticity of the skin, and (5) as a conservation agent for protein.

Hundreds of persons can maintain normal weight easily. Others are too thin, a condition recognized as a health hazard for centuries. The remaining group is made up of those whose weight is excessive.

A recent Gallup poll reported by a popular news magazine indicates that 45 per cent of the women in the United States, and 25 per cent of the men, admit to excess poundage. The variation by sex, incidentally, was explained as being due to men's reluctance to "face the facts." From those figures it is estimated that the number of overweight persons in this country adds up to 34 million.

One of the big life insurance companies reports a smaller number of overweight persons, 25 million, and their statistics show that one of every three adults wants to lose weight. To help in this objective, the company has stepped up its program of education through movies, television, film slides, pamphlets,

exhibits, and data for speeches and articles. The material is planned for four different groups, professional personnel, policyholders, voluntary health agencies, and the general public.

The company requested the co-operation of the Kansas State Board of Health and the Kansas Medical Society in making arrangements for showing a film, "Cheers for Chubby," in Kansas theaters. It was later reported that the film was shown in 50 per cent of our theaters on 1,225 separate programs to an estimated 226,000 persons.

Theories on the causes of overweight are multitudinous, but most professional opinion recognizes only one, excessive intake of calories. A doctor from this area, writing on fatness as a disease, presented interesting statistics.

"A pound of fat has about 4,100 calories," he said. "A calorie is the heat required to raise 15 drops of water one degree centigrade. There are 3 calories in a fourth teaspoon of sugar or a piece of butter the size of a lima bean. About 3 calories are lost climb-

## SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

Claude D. Baker, M.D.  
4172 Menlo Drive  
Wichita, Kansas

William W. Benefiel, M.D.  
P. O. Box 105  
Medicine Lodge, Kansas

Albert E. Blair, M.D.  
116 Southwest 4th Street  
Newton, Kansas

Niles A. Borop, Jr., M.D.  
U. S. Army Hospital  
Camp Carson, Colorado

Bernard A. Brungardt, M.D.  
137 North 9th Street  
Salina, Kansas

Ralph S. Crawshaw, M.D.  
2113 Potomac Drive  
Topeka, Kansas

James H. Enns, M.D.  
211 S. E. 4th  
Newton, Kansas

Karl A. Erlich, M.D.  
226½ West Central  
El Dorado, Kansas

Dan Wesley Hoeber, M.D.  
227 Poplar  
Halstead, Kansas

Charles R. Hopper, M.D.  
172 Artillery Loop  
Fort Sam Houston, Texas

Erwin M. Janzen, M.D.  
120 Southwest 2nd Street  
Newton, Kansas

Maurice H. Jennison, M.D.  
4136 Adams  
Kansas City, Kansas

Edwin R. King, M.D.  
1708 First Street, N.W.  
Washington 1, D. C.

Glenn A. Lessenden, M.D.  
1309 Ohio Street  
Lawrence, Kansas

Edwin R. Maier, M.D.  
1115 North 3rd Street  
Arkansas City, Kansas

Ward A. McClanahan, M.D.  
1425½ Buchanan  
Topeka, Kansas

Arthur W. McMahon, Jr., M.D.  
Winter V.A. Hospital  
Topeka, Kansas

Don R. Miller, M.D.  
1847 Oakland  
Kansas City, Kansas

Victor North, M.D.  
1105 Perry Avenue  
Wichita, Kansas

Joseph E. Seitz, M.D.  
Wakeeney, Kansas

Dana A. Tompkins, M.D.  
Route 2  
Bonner Springs, Kansas

Richard C. Tozer, M.D.  
Winter V.A. Hospital  
Topeka, Kansas

John L. Weaver, M.D.  
4206 Prairie Lane  
Mission, Kansas

Robert Weimer, M.D.  
206 Third Street  
Fort Leavenworth, Kansas

S. B. Whittenberger, M.D.  
6029 Delmar  
Mission, Kansas



ing a flight of stairs 10 feet high. An ounce of cream has 100 calories. In walking a mile, 100 calories may be lost. A good, fast walker can lose around 4,100 calories or a pound of fat walking 36 miles."

Public interest in calorie counting was demonstrated in this area recently. A newspaper which offered to send printed cards showing the caloric value of common foods to all who requested them was unable to keep up with the demand a day or so after the offer was made known. A feature story on reducing, "The Fat Boy Diet," which was continued from day to day, inspired many expressions of appreciation from the paper's readers.

The general public, often gullible, has tried a variety of reducing regimens, pills, vitamin supplements, slenderizing creams, laxatives, candies to be taken just before meals, one-food diets, "Hollywood diets," 7-day and 14-day diets of bizarre ingredients, and bath powders. The chairman of the Council on Physical Medicine and Rehabilitation of the A.M.A., Dr. Frank H. Krusen of Rochester, Minnesota, reported on such fads only to label them as unsuccessful. "The person who desires to reduce weight," he said, "must be reasonably intelligent, strongly motivated to reduce, have sufficient will power to remain on the low-calorie diet, and realize the importance of keeping his weight down."

The psychological angle has also been tried in weight reduction. In some cities reducers have banded together to give each other moral support. In Chicago, for instance, the Y.W.C.A. has three chapters meeting regularly with a psychiatrist. Still other meet for mutual aid as members of TOPS, Take Off Pounds Sensibly.

If it is true that misery loves company, Americans may find their problems less weighty by considering the avoirdupois troubles of others, especially in Great Britain. There the problem is especially complicated for physicians, who must attempt to please patients who want to reduce and at the same time keep in mind instructions from the ministry of health. A release from Kemsley News Service, London, is quoted.

"Slimming is costing Britain hundreds of thousands of pounds (sterling) a year because nearly 750,000 'slimmers' are doing it on the national health service.

"Most of the slimmers are women, and the ministry of health, having carried out a full-scale investigation, has sent a letter to 20,000 doctors. Tactfully worded, the letter suggests that 680 million dollars a year could be saved if the doctors prescribed one particular drug, instead of prescribing a proprietary brand. This drug alone had cost the country \$1,120,000.

". . . The investigation showed that Britons are swallowing nearly 100 million slimming tablets a

year, each person taking at least 300 in the minimum three-month course.

"Some medical men think the slimming craze is getting out of hand. Women are demanding tablets at a time when hospitals are having to economize on vital drugs to keep within their budgets."

## ACTIVITIES OF MEMBERS

Dr. George I. Thacher, Waterville, observed his 50th anniversary in the practice of medicine last December. A postponed observance of the occasion was set for April 19, when the Chamber of Commerce of Waterville sponsored a celebration in Dr. Thacher's honor.

Dr. Franklin D. Murphy, chancellor of the University of Kansas, was guest of honor at a dinner given by the Atchison County K.U. Alumni Association at Atchison recently.

Dr. George J. Pierron, Olathe, announces that Dr. William E. McCann, who was recently released from service with the Navy, is now associated with him in practice. Dr. McCann was graduated from the University of Oklahoma School of Medicine in 1947.

Dr. H. W. Jury, who has completed 50 years of practice in Claflin, was presented a plaque of appreciation by the Claflin Lions Club at a recent meeting.

Dr. Irene Koeneke, Halstead, is one of three women appointed to represent Kansas on the National Board of Women's Medical College of Pennsylvania.

Dr. Carl M. Smith, Sedan, announces that Dr. George Hassard will be associated with him in practice after July 1. Dr. Hassard is now interning at Menorah Hospital, Kansas City, Missouri.

Dr. F. Wyatt Huston of Winchester was presented a citation of merit by Tarkio College, Tarkio, Missouri, at a ceremony held in March. The citation was for "outstanding achievements and service to others." Dr. Huston was graduated from Tarkio College in 1929 and from Rush Medical College in 1934.

Dr. R. Burnley White, Hanover, attended a refresher course at the University of Illinois Hospital in March. During his absence, Dr. R. H. Brownberger, Kansas City, Missouri, cared for his practice.

Dr. John D. Huff, a graduate of the University of Kansas School of Medicine who recently completed his internship at Bethany Hospital, Kansas City, is now practicing in Argentine in association with Dr. Findley Law.

Dr. Doris A. Kubin and Dr. Charles E. Montgomery, both of Kansas City, recently enrolled for a four-week course of study on radioisotopes at the Oak Ridge Institute of Nuclear Studies, Oak Ridge, Tennessee.

Dr. W. W. Kridelbaugh, Arkansas City, was guest speaker at a recent meeting of Kansas and Oklahoma x-ray technicians. Dr. Warren S. Peiper, Arkansas City, was also a guest at the meeting.

Dr. James B. Pretz, who served in the Army Medical Corps during the past two years, was recently released from service and has resumed his practice in Kansas City.

Two health officers who were recently appointed are Dr. H. E. Haskins, Kingman, for Kingman County, and Dr. Donald E. McCoy, Oberlin, for Decatur County.

Dr. Archie B. McConnell, Burlington, spoke on rheumatism and rheumatic fever before the Burlington Rotary Club at a recent meeting.

Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was recently appointed editor of the *Journal of Pharmacology and Experimental Therapeutics*.

Dr. Clarence J. Weber, new pathologist at Asbury and St. John's Hospitals in Salina, was the subject of a feature story in the *Salina Journal* in March.

The office and practice of the late Dr. Paul M. Krall, Kansas City, have been taken over by Dr. Charles Edward Gilliland. Dr. Gilliland has been practicing in St. Louis for the past 25 years and was

on the staff of Washington University Medical School and Barnes Hospital there.

Dr. Alden Flanders, Hays, who was recently called to military service, resigned as consulting physician at Fort Hays State Teachers College before leaving. He was replaced in that position by Dr. Glen Hutchinson of the Eddy Clinic, Hays.

Dr. A. E. Beahm, Great Bend, has been named city and Barton County health officer to fill the unexpired term of Dr. Homer Russell who resigned from the posts.

Dr. H. M. Wiley, Garden City, was speaker at an all-county cancer meeting held at Dighton on March 12.

The Colt and Colt Clinic, Manhattan, announces that Dr. E. W. Christmann of Kansas City has joined its staff and is specializing in obstetrics and general practice. Dr. Christmann is a graduate of the University of Kansas School of Medicine.

Dr. O. W. Davidson, Kansas City, spoke on challenges and opportunities for civic clubs before a joint meeting of the Lawrence and Kansas City Kiwanis Clubs at Lawrence on March 5.

Dr. George M. Gray, dean of Kansas City physicians, was the subject of a feature story in the *Kansas City Kansan* on the occasion of his 97th birthday in March.

Dr. F. E. Wrightman, Sabetha, recently completed a course in cardiology and electrocardiography at the School of Medicine of the University of Michigan.

Dr. Warren W. Burns, formerly of the Nelson Clinic, Manhattan, has begun a course of training at the Norwich State Hospital, Norwich, Connecticut, while awaiting a call to active duty with the armed forces. He plans to specialize in psychiatry later.

Dr. F. A. Garvin, Augusta, was honored by the Order of Eastern Star in that city recently in recognition of his 50th anniversary as a member of the order.



Dr. D. B. McKee, Pittsburg, was guest speaker at the March meeting of the Crawford County Medical Assistants' Society. He spoke on the Kansas State Board of Health.

Dr. D. N. Medearis and Dr. Agnes Robbins, Kansas City, were recently named to the Technical Advisory Committee of the new Wyandotte County Child Guidance Center.

Dr. Karl A. Menninger and Dr. William C. Menninger, Topeka, were presented distinguished service awards in recognition of "a lifetime of service to the community and to the scientific world" by B'nai B'rith Lodge of Topeka last month.

Dr. J. H. A. Peck, St. Francis; Dr. John M. Porter, Concordia, and Dr. L. S. Nelson, Sr., Salina, took part in a program held at St. Francis in March to dedicate the new Cheyenne County Hospital.

Dr. Paul W. Schafer, chairman of the department of surgery at the University of Kansas School of Medicine, presented the annual lecture at the meeting of the Nashville Surgical Society at Vanderbilt University on March 13. His subject was "The Use of Plastic Materials in Reconstructive Surgery of the Chest Wall and Diaphragm."

A feature story in the *Cherryvale Republican* on March 27 paid tribute to Dr. William G. Norman, who has practiced in Cherryvale for 46 years.

Dr. Donald L. Rose, chairman of the department of physical medicine at the University of Kansas School of Medicine, presented papers at two meetings recently. On March 26 he spoke on "Painful Low Back" before the Cleveland Society of Physical Medicine and Rehabilitation, and on April 27 he discussed "Electrodiagnosis" before a meeting of the Missouri Chapter of the American Physical Therapy Association.

Dr. Albert E. Bair, who was recently released from service with the Air Force, has reopened his office for general practice in Independence. During his last 18 months of military service, Dr. Bair was stationed at Weisbaden, Germany.

Dr. John B. Jarrott, Hutchinson, announces the move of his office to a new location and his future association in practice with Dr. E. B. Struxness, who is soon to be released from military service.

Dr. Stanley R. Friesen and Dr. David W. Robinson, of the University of Kansas Medical Center, were recently elected to membership in the Central Surgical Society.

A committee composed of Dr. Earl L. Mills, Wichita, and Dr. Lee H. Leger and Dr. Mahlon H. Delp, Kansas City, arranged the scientific program for a regional meeting of the American College of Physicians held in Kansas City on March 20. Among those who took part in the program were: Dr. Henry S. Dreher, Jr., Salina; Dr. T. K. Lin, Kansas City; Dr. John L. Morgan, Emporia; Dr. Benjamin Metasarin, Wichita; Dr. Max S. Allen, Kansas City; Dr. John E. Crary, Topeka; Dr. Robert Bolinger, Kansas City; Dr. Robert A. Jordan, Lawrence, and Dr. Robert W. Weber, Kansas City.

Dr. Thomas G. Orr, Jr., instructor in surgery at the University of Kansas School of Medicine, read a paper, "Evaluation of the Maes Technique for Leg Amputation," at a recent meeting of the Southeastern Surgical Congress in Louisville, Kentucky.

## COUNTY SOCIETIES

The March meeting of the Harvey County Medical Society was held at the Ripley Hotel, Newton, on March 2. A team from the Kansas Academy of General Practice were guests. Dr. James H. Enns, Newton, presented a paper, "The Accommodative Element of Estropia." At the business session Dr. R. C. McClymonds of Walton and Dr. H. G. Schaumloffel of Burrton were elected to honorary membership.

A later meeting was held on April 6. Dr. W. C. Dreese, Halstead, gave an illustrated paper on "Chronic Thyroiditis."

Members of the Geary County Society were hosts to the Golden Belt Medical Society at a meeting held April 9 at the Bartell Hotel, Junction City. Dr. Alfred Uihlein of the Mayo Clinic spoke on "Hydrocephalus and Spina Bifida," and Dr. C. J. Weber, Salina pathologist, discussed "Potassium Deficiency." Dinner was served after the program, and a business session followed.

Members of the McPherson County Society and Auxiliary entertained doctors and their wives from Harvey and Marion counties at a meeting on March 19. Dr. Carl Zacharias, an immigrant physician living in McPherson and interning at St. Francis Hospital, Wichita, spoke on "Present Day Medical Practice in Germany." Mrs. Zacharias presented an original puppet show.

Dr. Lafe Bauer was elected president of the Smith County Society at a meeting held at Smith Center recently. Dr. R. G. Sheppard was named vice-president, and Dr. Victor E. Watts was re-elected secretary. Dr. Buford Hartman will be delegate to the state meeting.

Members of the Shawnee County Society and their wives were guests of the Shawnee County Medical Assistants' Society at a party held at the Hotel Kansas, Topeka, on March 30. Mrs. May J. McGuire, Kansas City, spoke on "Famous Men."

The Southeast Kansas Medical Society met at the Booth Hotel in Independence recently with members of the Auxiliary as guests. Two speakers from the University of Kansas Medical Center presented the scientific program. Dr. Charles C. Herbert, assistant professor of medicine, spoke on "Differential Diagnostic Points in Chest Diseases." Dr. Paul R. Schloerb, assistant professor of surgery, discussed "Postoperative Care."

A recent meeting of the Wyandotte County Society was devoted to a film and discussion on glaucoma. Dr. James E. Bresette served as moderator.

Physicians from Miami, Franklin, and Anderson counties were present at a recent meeting of the Miami County Society. Dr. Harry Wahl, Kansas City, spoke on "Pathology in the Aging Process."

A joint meeting of the medical societies and auxiliaries of Brown, Doniphan, Jackson, Marshall, and Pottawatomie counties was held in Seneca on April 28. Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was speaker.

Members of the Shawnee County Society held a dinner meeting at their new office building on April 13. Dr. John Adriani, New Orleans, spoke on "Newer

Items of Anesthesia of Interest to Non-Anesthetists." Mr. Oliver E. Ebel, executive secretary of the Kansas Medical Society, discussed activities of the state organization.

## DEATH NOTICES

HAROLD ROSS FIELDS, M.D.

Dr. H. R. Fields, 35, only physician in Johnson, died March 20 as the result of injuries suffered the day before when the wall of a building being razed collapsed on him. He had practiced in Johnson for more than four years and was on the staff of the hospital at Ulysses, where he died. He was an active member of the Finney County Medical Society. Dr. Fields was graduated from the University of Kansas School of Medicine in 1945 and served in the Navy on the *U.S.S. Wisconsin* during World War II.

MIDDLETON LEE PERRY, M.D.

Dr. M. L. Perry, Topeka, who served as president of the Kansas Medical Society in 1922-1923, died at the home of his son in Kansas City on April 10. He was 84 years old. He had been superintendent of the Topeka State Hospital for 30 years, retiring from that post in 1948. Prior to that, he had been superintendent at the State Hospital for Epileptics in Parsons for 15 years. He was a graduate of the University of Tennessee College of Medicine, class of 1892, and had done postgraduate work at the University of Virginia, the University of Berlin and the University of Vienna. Dr. Perry was a member of the American Psychiatric Association and of the Central Neuropsychiatric Association.

CHARLES WESLEY BEASLEY, M.D.

Dr. C. W. Beasley, 82, who had practiced medicine for 59 years, died April 7 at his home in Lyndon. He had practiced there since 1901, and became inactive early this year. In 1950 he and Mrs. Beasley, on the occasion of their golden wedding anniversary, were honored by the community and were presented a car and other gifts of appreciation for his services. Dr. Beasley was a graduate of Missouri Medical College, St. Louis, with the class of 1894. He was an honorary member of the Osage County Medical Society.



# Tumor Conference\*

## Brain Tumors

Edited by H. I. Firminger, M.D., and F. R. Skelton, M.D.\*\*

Dr. Helwig: These two cases of brain tumors will serve to emphasize the well known statement of Foster Kennedy. In the introduction to Dr. Bailey's book on intracranial tumors,<sup>1</sup> Kennedy is quoted as follows: "Who cares for patients with brain tumor must bring to his problem much thought and stout action. There is need also of a formidable optimism, for the dice of the gods are loaded."

CASE NO. 52-109

Dr. Williamson: M. T. was a 5-year-old white boy, one of 12 children. He had not been injured or ill until last June, when he had two episodes of fever and vomiting, followed by recovery. Four weeks before admission, his mother first noticed that he staggered when he walked; he seemed to fall to either side. There had been a little fluctuation in the staggering, but on the whole it had become progressively worse. He had complained of headache on one or two occasions and, on one occasion before he came in, had vomited without warning. There were no other neurological symptoms.

On examination, the boy walked with a typical cerebellar gait; that is, with a wide base in order to keep his balance. He had difficulty in keeping his trunk in line with the vertical plane. He could not walk heel-to-toe without falling and tended to fall equally to either side. In the Romberg position he fell even with his eyes open. He had bilateral papilledema and nystagmus on right and left lateral gaze which was worse to the right. There was a "cracked-pot" sound on percussion of the skull, indicating that his cranial sutures were separated. He had remarkably good ability to do the finger-to-nose test on each side, and good ability to do the heel-to-knee test, so his ataxia was mainly truncal.

Roentgenograms of the skull confirmed the separation of the sutures. An electroencephalogram was normal. A ventriculogram was done by thrusting the spinal needle through the separated sutures. One hundred ten cubic centimeters of fluid under increased pressure was removed and replaced with air. Films revealed marked internal hydrocephalus with considerable elevation of the floor of the fourth ventricle and a tumor projecting into the lower end of the dilated fourth ventricle. A suboccipital craniot-

omy was done, with removal of most of the tumor. His postoperative course has been satisfactory. He is now receiving x-ray therapy.

Dr. Tice: These films show everything Dr. Williamson described. The coronal, lambdoid, and sagittal sutures are widely separated. We did not see the hammered-brass appearance of the skull, considered so characteristic of prolonged increased intracranial pressure, especially in adults. The fourth ventricle is elevated, and there is marked dilatation of the lateral ventricles, third ventricle, and anterior horns (Figure 1). We felt there was something obstructing

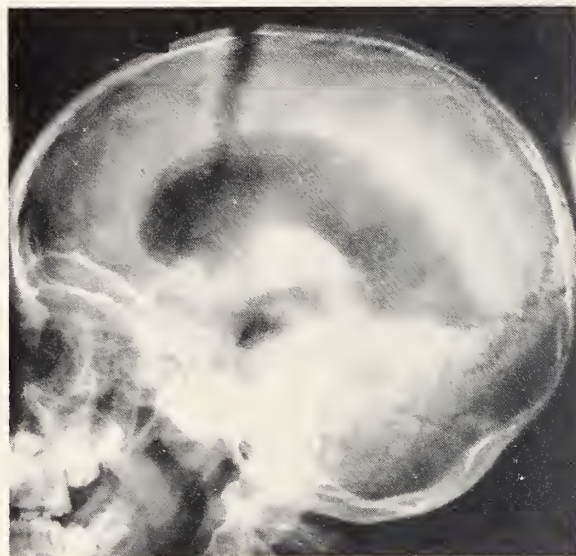


Figure 1. Roentgenogram of the skull showing the separation of sutures, the marked dilatation of the ventricles, and the elevation of the floor of the fourth ventricle.

the fourth ventricle in the posterior fossa. In a child of this age a medulloblastoma is, I think, the logical diagnosis.

Dr. Boley: Microscopically the tumor is mostly within the meninges. The greater part of the tumor has a uniform appearance and is composed of sheets of cells that vary little in size. The tumor cells are larger than lymphocytes, usually are elongated and oval, and the greater number are hyperchromatic. The cells show indistinct cytoplasmic borders and tend to run together as in sarcoma. Some mitotic figures are seen. The Masson stain for connective tissue shows that the tumor cells are not producing fibrous tissue, but the tumor has infiltrated around the meningeal blood vessels in pre-existing meningeal

\* Cancer teaching activities aided by a grant from the National Cancer Institute and the Kansas Division of the American Cancer Society.

\*\* Trainee of the National Cancer Institute.



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stroma. About the only thing that is characteristic of this tumor is the uniform hyperchromatic cells and the occasional tendency toward pseudo-rosette formation. If one were given this slide without any history, it would be difficult to decide whether it was a medulloblastoma or a neuroblastoma of the adrenal. With the benefit of the history, it seems clearly to be a medulloblastoma.

Dr. Williamson: This was the classical clinical picture of medulloblastoma. In the first place, he had the picture of cerebellar tumor, and his main symptom was that of unsteadiness in gait, associated with headache and vomiting. Secondly, it was obviously tumor because it had produced increased pressure which could be clinically verified by two signs: one, the "cracked-pot" sound of skull percussion, and the other the papilledema observed on ophthalmoscopic examination. The only question remaining was the type of cerebellar tumor.

Fundamentally, most of the cerebellar tumors in childhood are one of two types: astrocytoma or medulloblastoma. Most often we can tell preoperatively which it is. The astrocytoma, being a benign tumor and being one which is usually out in a hemisphere, has a longer history and is more likely to have unilateral signs. The medulloblastoma, being highly malignant and arising in the midline and presenting into the fourth ventricle, has a short history because it blocks the fourth ventricular aqueduct early and produces high intracranial pressure. As a result, the cerebellar signs are equal on examination—you can't choose between the right and left sides. This boy had truncal ataxia, with no ataxia of his extremities. Clinically, we felt that it was a malignant midline tumor. At surgery, the tumor was the size of a hen's egg and filled a greatly dilated fourth ventricle, but was removed without any technical problem. However, it could be seen infiltrating into the edges of the cerebellum bilaterally.

Why, then, did we operate on him if we knew it was a medulloblastoma which could not be completely removed surgically? The main reason for operating is that one can never be sure of the tumor type until he removes a piece and the pathologist examines it. Medulloblastoma is one tumor that responds beautifully to x-ray, it just melts down; but it's disastrous to treat a benign cerebellar astrocytoma with x-ray because it doesn't respond. It would be most regrettable to let the child go blind with papilledema and die, only to find a benign curable tumor. Roughly, 50 per cent of the tumors in these cases are astrocytomas and 50 per cent medulloblastomas; so, with a one-month history and a midline picture, we felt this child had a medulloblastoma, but surgery was done for verification.

Once we had verified it, we tried to remove enough

of the tumor to relieve the block. We removed all of the tumor from the fourth ventricle, which relieved the hydrocephalus and made the patient clinically almost well. We then turned him over to Dr. Tice for x-ray therapy, and he should get completely well clinically. Three months from now you won't find a sign in this boy. He will stay well one to two years and then die of recurrence. You may ask why we can't operate on the recurrence. It is because this particular tumor seeds in the subarachnoid space, and recurrences very commonly are not in the posterior fossa. These patients come in with paraplegia, from seeding down the spinal canal, or they may have involvement of a frontal lobe, or maybe they will have aphasia or focal fits; and when they come to autopsy they have widespread scattered recurrences throughout the brain, the spinal canal, and the subarachnoid space.

There are two other cerebellar tumors that occur in childhood, although much less commonly. One is ependymoma of the fourth ventricle, which is about halfway between malignant and benign but relatively benign. Unfortunately, one can't totally remove it because it arises from the ependyma of the floor of the fourth ventricle, and we can't very well take that out and have anything worthwhile left. The other is hemangioblastoma of the cerebellum. Characteristically we see such tumors in adults, but occasionally we see it in a child. We can be suspicious of it if there is a vascular hemangioma of the skin somewhere or if there is a family history of such tumors; it is the one brain tumor that runs in families.<sup>2</sup>

Dr. Helwig: I think it should be emphasized that medulloblastoma is one of the rare tumors of the nervous system, generally speaking, that does respond as if by magic to irradiation. I have one case in my own material that survived 11 years before she seeded clear down to the cauda equina. This tumor used to be alluded to as diffuse multicentric sarcomatosis of the meninges until Bailey and Cushing<sup>3</sup> brought it into focus as a separate and distinct entity. Five years, I believe, is not too long to expect some regressions to last. I'd like to have you discuss your therapeutic management of these, Dr. Tice, if you will.

Dr. Tice: Our radiation is planned to crossfire the posterior fossa. We treat through the occipital portal, each lateral and vertical portal, using about an 8 or 10 x 10 portal. We strive to deliver approximately 4,000 r tumor dose or perhaps a little more. At the same time, because the tumor does seed up and down, we systematically treat the canal from the cervical spine down to the coccyx, giving a dose of around 2,500 or 3,000 r. One series that I recall reported 19 months average survival of the cases.<sup>4</sup> Years ago we checked our cases. We didn't have very many, but I think ours was about 21 months average survival.

# 50 and Six

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#### CASE NO. 52-110

Dr. Brackett: L. S. was a 42-year-old man. About 3 months before admission, while sitting at a counter, he had a sudden episode of extreme weakness which involved his right arm and leg. He turned around and grasped the counter, and almost before he realized what was happening the symptoms had disappeared. He remained fairly well until approximately 3 weeks before admission, when he had a progressive and insidious onset of weakness of the right arm and leg. In addition to this, he had some difficulty with sensation in the right side. He said he had had episodes of numbness involving the right arm for as long as 10 years before admission; the significance of this was not clear. Examination showed a very slight degree of papilledema. He walked with a shuffling gait and had an obvious right hemiparesis. He had slight hyperreflexia on the right side, with absent abdominal reflexes on the right. He also had astereognosis on the right. An arteriogram and an electroencephalogram were normal. Dr. Tice, will you describe the ventriculograms?

Dr. Tice: There was no dilatation of the ventricles. The lateral ventricles, which should form a smooth curve running posteriorly, were depressed downward. In addition, there was right lateral displacement. We felt that there was a mass in the parietal lobe on the left side.

Dr. Brackett: Clinically this patient had all the findings of left parietal lobe tumor, and we considered two possibilities. If this history of intermittent numbness of the right arm of 10 years' duration were real, there was always the possibility that we were dealing with a parasagittal meningioma. If, however, it were not real and had no connection with his present problem, then the 3-weeks history indicated a rapidly growing tumor. From the ventriculogram, we were surprised to see that this ventricular deformity which Dr. Tice has demonstrated was present in both lateral ventricles and, actually, appeared more marked in the right lateral ventricle than on the left. This strongly suggested the possibility that this tumor arose in the corpus callosum and was growing bilaterally into both cerebral hemispheres. However, without operation it was impossible to exclude the possibility that this patient had a dumbbell parasagittal meningioma arising from the falx.

Therefore, a flap was turned up in the region of his left parietal lobe. The surface of the brain was tense and bulged under a great deal of pressure, and it was necessary to make a transcortical incision in the left parietal area. At a great depth, and farther anterior than we had anticipated, we encountered a glioblastoma. Wisely or unwisely, because we were

faced with a bulging brain, I decided to make a separate incision well anterior to the anterior margin of the flap and try to remove enough tumor to effect decompression. This was not successful, and we were forced to sacrifice the bone flap. After operation, the patient's hemiparesis was converted to a hemiplegia, and he was considered an operative failure. He was discharged to go home approximately a week after operation.

In general, these glioblastomas are not sensitive to x-ray therapy. My personal policy, and this will vary considerably, has been this: if a partial removal has been carried out, then the patient is given x-ray therapy. If it has been impossible to carry out any type of surgical removal, then I don't believe that x-ray therapy is indicated. The one indication for surgery in malignant gliomas of this type is to relieve suffering from pressure. When the tumor is located in a lobe which can be readily removed, such as the left or right frontal lobe or a temporal lobe, one can remove the lobe and relieve the patient's main symptoms due to pressure. It will give the patient a number of months and in a few cases a year or two of useful life before he finally succumbs to his tumor.

Dr. Helwig: Thank you. Dr. Boley, will you tell us about the biopsy on this case?

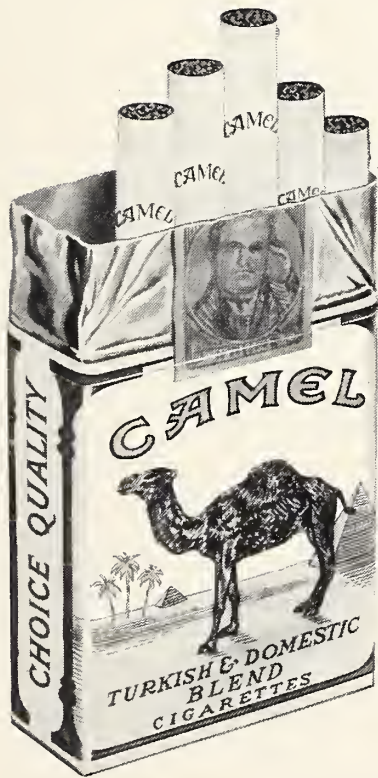
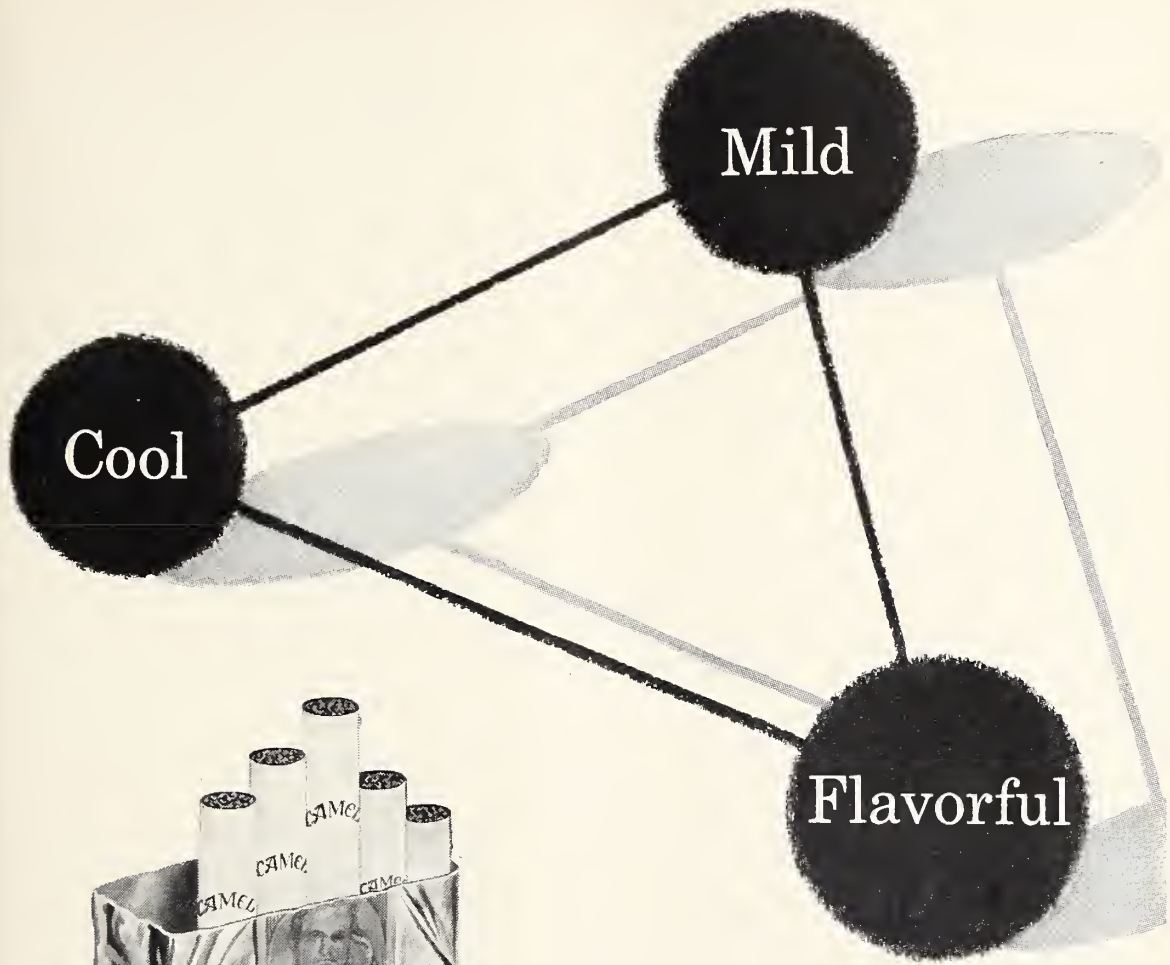
Dr. Boley: The tumor was quite cellular, with areas of necrosis and a few areas of hemorrhage suggestive of rapid growth. There is a great deal of variation in the cells; specifically, there are giant cells, often with multiple nuclei. There are numerous astrocytes, and in areas immature cells predominate. The microscopic findings are those of glioblastoma multiforme.

Dr. Helwig: Dr. Stoddard, would you comment further on the microscopic features of this tumor?

Dr. Stoddard: It might be worth pointing out that gliomas often are variable in their morphology from area to area, and classifications of gliomas based on biopsy fragments or one-section sampling must be accepted with reservation. One has to sample these tumors widely; and, when you do, many cases do not fit the rather arbitrary classifications that have been set up for brain tumors.

Dr. Helwig: If one encounters a rapidly growing infiltrative astrocytoma or astroblastoma, the outlook is just as grave as it is for glioblastoma multiforme, so if such a tumor shows sufficient variation in nuclear form, even though it be of astrocytic background, you can't hope to cure it. Therefore, it really doesn't make a great deal of difference as to the diagnosis of these two tumors.

Some new methods have been devised within the last few years for localization of these tumors by the use of ultrasonics, fluorescein and radioactive isotopes such as  $P^{32}$ . One treatment consists of giving intra-



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venous boron and lowering the patient into a crypt in an atomic pile and bombarding him with uranium<sup>235</sup>, thus making the boron set up a chain reaction. I would like to ask Dr. Williamson to comment on those procedures.

Dr. Williamson: The basis on which radioactive isotopes have been used for localizing tumors was first brought out by the Minnesota group, Moore and Peyton,<sup>5</sup> who were working with fluorescein, trying to get tumors to fluoresce. They came out with a very practical procedure that we have used occasionally. If intravenous sodium fluorescein is administered to a patient an hour before a craniotomy is performed, the fluorescein will concentrate in the tumor 10, 12 or 15 times higher than in normal brain. It subsequently has been proved that it is due to the abnormal capillaries of the tumor. Fluorescein will seep through these capillaries, where it does not seep through capillaries of normal brain. At operation, if one puts the tumor or biopsy tissue from the tumor under a Wood's ultraviolet light, it fluoresces because of its fluorescein content. So, for a while they were advocating, instead of sending the needle biopsy specimen to the pathologist, that one place the tissue under a Wood's light and see if it glowed. If it glowed, it was tumor. After all, that's the main thing we want to know in a needle biopsy.

Then they tried tagging the fluorescein with radioactive iodine to make diiodofluorescein. This group has continued to use radioactive diiodofluorescein, giving it intravenously, then going over the head with a Geiger counter. Using radioactive localization, Loyal Davis<sup>6</sup> and his group in Chicago have reported 300 cases in which they succeeded in localizing 95 per cent of tumors, with very few errors on the right and wrong side.

The group in Minnesota is a little more conservative, and they now report that if they use the clinical picture of the case to correlate with their interpreting the radioactive isotope localization, they can be about 75 to 80 per cent accurate.<sup>7</sup>

LeCocq says, however, that it has to be correlated with the pathological tissue. A cystic tumor, for instance, won't concentrate any dye in the cyst. The very vascular tumors concentrate much more dye than the avascular ones. A brain abscess or subdural hematoma will concentrate dye anywhere there are abnormal capillaries. Now most investigators are using iodinated serum albumin, because it stays in the body a long time and you can test today and recheck tomorrow. With radioactive iodine, it's excreted so rapidly and picked up by the thyroid, that you can test patients only for 2½ hours.

We set up a counter here and started using this technic, and we found it rather impractical because it takes about 3 hours to run a test. Furthermore, it

takes a skilled person running the tests all the time to perfect the technic to the point where he can probably diagnose approximately 75 per cent of them as to the site, and whether it's tumor or not. Unless we can do much better than that, in a shorter time, it is rather impractical for us.

So far as ultrasonics are concerned, I heard Dr. French,<sup>8</sup> with the Minnesota group, when he gave his first paper on using supersonic sound to try to localize brain tumors. They started off the easy way: on brains with known tumors in them, removed at autopsy, beaming supersonic sound and catching the rebound in radar fashion on return of the impulse. They weren't getting anywhere with that. I talked to Dr. French one year after that first paper, and they still weren't getting anywhere. I've heard no recent papers at all.

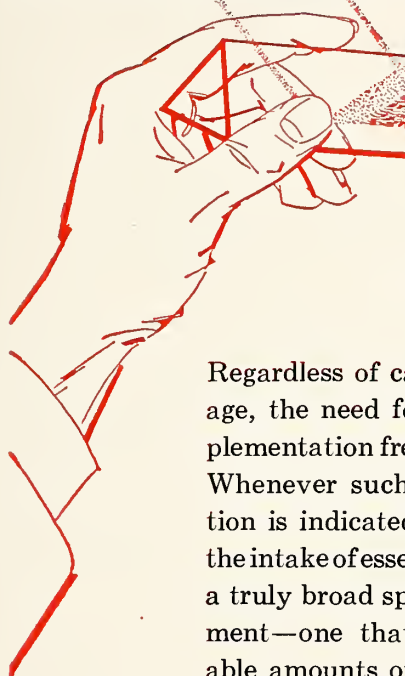
As to treatment with the radioactive isotopes, no isotope concentrates enough in the tumor to make it practical for treatment; that's been tried very thoroughly and very carefully. Just recently in New York at a symposium on the treatment of malignant tumors,<sup>9</sup> everyone agreed that there was not enough concentration of any presently known dye or chemical to carry a radioactive isotope into a tumor to render a useful dosage without getting much too high a concentration in the brain itself.

Dr. Helwig: In closing, I think it should be emphasized that in contrast to these two cases there is a rather large group of tumors of the brain with a very favorable outlook; in fact, probably 55 to 60 per cent of brain tumors do have a favorable outlook, such as cystic astrocytomas, certain sharply circumscribed oligodendrogliomas, pituitary adenomas, some Rathke pouch cysts, some pinealomas, some ependymomas, some cystic hemangiomas, and a fair percentage of meningiomas. So don't get the impression from these cases, which were doomed at the outset, that brain surgery hasn't come a long way, and that there aren't many favorable tumors that can be attacked successfully.

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## ANNOUNCEMENTS

The Department of Otolaryngology, University of Illinois College of Medicine, announces its annual assembly in otolaryngology. The basic section, September 21 through September 26, will be devoted to surgical anatomy and cadaver dissection of the head and neck, and histopathology of the ear, nose, and throat. The clinical section, September 28 through October 3, will consist of lectures and panel discussions, with group participation in otolaryngological problems and current trends in medical and surgical management.

Registration will be limited. Information may be secured from the Department, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois.

The Fifth Annual Course in Postgraduate Gastroenterology, sponsored by the National Gastroenterological Association, will be given at the Hotel Biltmore, Los Angeles, October 15, 16, and 17. Dr. Owen H. Wangenstein, professor of surgery at the University of Minnesota Medical School, and Dr. I. Snapper, director of medical education, Cook County Hospital, Chicago, will be co-chairmen. One complete session will be devoted to a clinic at the College of Medical Evangelists at Loma Linda.

Complete information may be secured from Department GSJ of the Association, 1819 Broadway, New York 23, New York.

The Schering Corporation, Bloomfield, New Jersey, has announced its eighth annual competition for medical students. Three \$500 prizes will be awarded the students whose essays are judged winners on the subject of (1) antihistaminic treatment of upper respiratory allergies and infections; (2) hormone therapy of the degenerative diseases, or (3) new concepts in the treatment of peptic ulcer. Essays are to be no longer than 5,000 words. The deadline for submitting entry forms is July 1, 1953, although manuscripts may be received as late as October 1.

More than 25,000,000 people are now enrolled in Blue Shield plans, according to Frank E. Smith, director of the national Blue Shield organization. This constitutes 16 per cent of the entire population. A total of \$208,000,000 was paid in benefits during 1952, which was 80 per cent of the plans' income. The national average expense of operation was brought down to a new low of 12 per cent.

## OPINIONS OF MEDICAL OFFICERS

An interesting analysis of 467 questionnaires returned by former armed forces medical officers was recently released by the Council on National Emergency Medical Service of the A.M.A. The physicians supplied information on percentage of time spent in treatment of military personnel and their dependents, staffing conditions, and their willingness to remain in service.

They reported that between 44 and 54 per cent of their total overseas time was spent in treatment of military personnel. In service in this country the percentage varied from 39 to 53. Treatment of dependents took between 19 and 28 per cent of overseas time and between 25 and 44 per cent of domestic time.

The following figures illustrate opinions on staffing conditions: overstaffing, 136 replies, 15 to 44 per cent; understaffing, 79 replies, 15 to 28 per cent; adequate, 227 replies, 42 to 58 per cent.

Two hundred fourteen stated that they were willing to stay in service; 236 indicated that they did not wish further military duty.

Further information on the subject will be compiled by the Council as replies are received from physicians returning to civilian life.

## SYMPOSIUM ON CHEST DISEASE

A symposium on diseases of the chest will be held at the State Sanatorium for Tuberculosis, Norton, on Sunday, June 14, under the auspices of the Northwest Kansas Medical Society. Dr. Carl Temple, Fitzsimons General Hospital, will conduct the symposium. As a special feature Mr. Olaf Soward, Topeka, will speak on "What the Public Thinks of the Medical Profession." Complete information on the program may be secured from Dr. C. F. Taylor, at the sanatorium, Norton. The program will begin in the afternoon at 1:30 o'clock.

## RESEARCH GRANT TO K.U.

A two-year grant of \$8,316 has been awarded the University of Kansas School of Medicine for research in circulatory system disease by the Life Insurance Medical Research Fund. Dr. Kenneth E. Jochim, assistant dean of the school and chairman of the department of physiology, will direct the study.

Notify the Executive Office of all changes of address. This will assure prompt delivery of all correspondence from the Kansas Medical Society. The Society's new address is 315 West Fourth Street, Topeka, Kansas.

# Meat...

## and the Low Sodium Diet

The beneficial effect of sodium restriction in the management of hypertension and many types of cardiac disease is firmly established. A low sodium diet aids in preventing edema and frequently leads to a significant reduction in arterial tension.

To emphasize the importance of sodium restriction and to enable the physician to present his patient with an informative discussion of the subject, The American Heart Association has just published a valuable pamphlet entitled "Food For Your Heart."\* Covered also in this booklet is the importance of weight reduction in the management of the cardiac patient.

Dietary recommendations for three levels of sodium restriction are given. In all of them, meat is an important constituent of the diet. In the diet providing moderate sodium restriction (0.5 to 1.5 Gm. of sodium), 4 to 6 ounces of unsalted meat, fish or fowl are allowed. In severe restriction (0.5 Gm. sodium), 3 to 4 ounces of meat are permitted daily. The weight reduction-moderate sodium restriction diet calls for 5 to 6 ounces of meat daily.

This booklet again emphasizes the valuable application of meat in the dietary management of cardiac disease, hypertension, and obesity. Since, as the manual emphasizes, infectious diseases and such scourges as typhoid fever have now been controlled with antibiotics, chemotherapeutic agents and modern sanitation, "many physicians and scientists consider nutrition the most important environmental factor in health."

Meat, with its wealth of high quality protein, B complex vitamins and important minerals, plays an important role in the aim toward better national health. That the generous consumption of meat by the American people is a significant factor in attaining this goal is reflected in the statement that "most physicians feel that the high American consumption of protein is a good thing."

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\*Food for Your Heart, a Manual for Patient and Physician, Department of Nutrition, Harvard School of Public Health, Harvard University, The American Heart Association, Inc., New York, 1952. Copies available through local Heart Association.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.



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# Systolic Murmurs\*

Henry H. Reed, Senior Student

University of Kansas School of Medicine

In 1816 Laennec devised the stethoscope. Now, more than 130 years later, there still exists a great deal of confusion about the significance of many systolic murmurs. This does not detract from the value of auscultation, but rather presents an additional challenge to analyze correctly the significance of physical observations.<sup>1</sup> The physician is frequently called upon to prescribe management for patients with systolic murmurs. The physician must also determine the acceptability of patients with systolic murmurs for insurance, athletics, and military service.

The art of diagnosis must always depend in large part on the observations, the care, the skill, intelligence, and reasoning power of the individual examiner. Thayer<sup>2</sup> feels that to be a competent and intelligent diagnostician one must be capable of exercising reason on the basis of simple anatomical, physical, and physiological considerations. Statistics are not the basis for competent diagnosis. Work correlating clinical findings with postmortem examinations, while yielding a wealth of information, leaves much unanswered. The dynamics of circulation, pressure changes, velocity of blood, etc., cannot be adequately studied with necropsy material.

Regarding the mechanism of a murmur, it is currently thought that murmurs and thrills are produced by the stream of blood passing from an area of relatively narrow caliber into a larger chamber, or by passing through a constricted area in a tube. This condition is easily duplicated experimentally. The resultant vibrations set up in the valves and walls of the heart chambers and of the great vessels cause the actual murmur. Fahr<sup>3</sup> felt that every tube has a "critical velocity," above which turbulence is produced without the blood passing into the "larger" chamber.

Some anomalous conditions, such as a torn valve or a streamer of tissue, may also cause a murmur. Contrary to the belief of many, roughening of the valve and vessel surfaces probably does not cause a murmur, nor does a gradual increase of the vessel caliber. The change must be abrupt.

The heart, with its aortic and pulmonic rings of relatively constant circumference, connects the powerfully ejecting ventricles to the elastic and easily dilatable distal vessels. Why then do we not always

have aortic and pulmonic systolic murmurs? The only answer proposed is that nature has so admirably adjusted ventricle, ring, and vessel that in normal function they act as if they are parts of one elastic tube of constant size.

The velocity with which the stream moves is the principal factor responsible for the intensity of the sound. The intensity, when heard by the auscultator, is influenced by the extent and character of the media through which the sound must pass before reaching the examiner's ear. The characteristic transmission areas of the various murmurs must be considered in relation to the intensity of the murmur.

In 1933 Levine,<sup>4</sup> in an effort to produce more clarity in the discussion of murmurs, recommended the use of a grading scale. This scale is a gradation of intensity only and, as currently advised by him, is as follows:<sup>5</sup>

Grade i—Faintest that can be distinctly heard. Unlikely to be audible during the first few seconds of auscultation.

Grade ii—A slight murmur heard immediately.

Grade vi—Very loud, may be heard with the stethoscope slightly removed from the chest wall.

Grade v—Loudest murmur still inaudible with the stethoscope removed from the chest wall.

Grades iii and iv are intermediate.

Levine further states that it has not appeared to be possible, with the present state of our knowledge, to draw any diagnostic conclusions from the fact that one murmur is "musical" or that another is "harsh" or a third is "whistling." This opinion is not generally accepted. Murmurs should be graded as to exact timing, duration, location, and transmission, as well as to intensity. The position of the patient must also be considered.

In 1942 Adams, Craib, and White<sup>6</sup> made another step toward helping to clear some of the confusion of terminology. They advocated discarding the terms "functional" and "organic" for the more significant clinical terms "physiological" and "pathological."

Their classification is as follows:

- I. Physiological murmurs.
  - A. Intracardiac or intravascular.
  - B. Extracardiac.
    - (a.) Cardiopulmonary.
    - (b.) Pericardial.
- II. Pathological murmurs.
  - A. Due to structural valvular disease.

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

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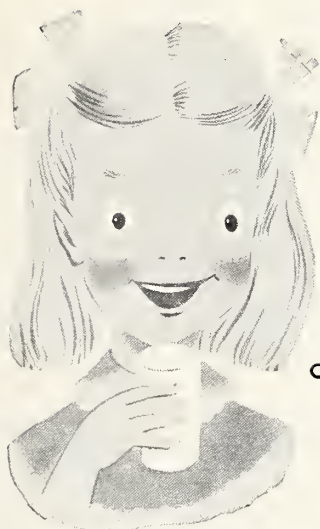
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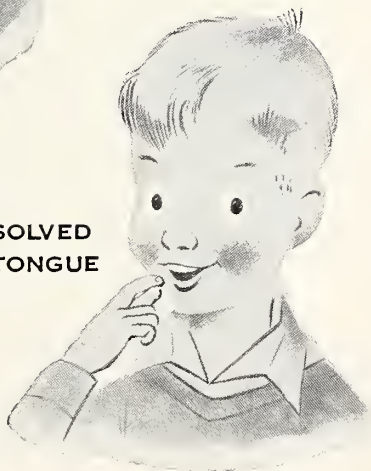


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
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- B. Due to congenital cardiovascular defects.
- C. Due to dilatation of ventricle, aorta, or pulmonary artery from (1) cardiovascular disease, or (2) other disease such as anemia, thyrotoxicosis, or severe infection.
- D. Due to pericarditis.

The use of such nomenclature as functional, accidental, hemic, accessory, adventitious, atonic, and non-organic is considered poor.

With these tools let us approach the murmurs found during systole at the various areas of auscultation.

#### APICAL SYSTOLIC MURMURS

In mitral insufficiency, the valve is a point of constriction in the course of regurgitated blood. This murmur is usually a blowing, high pitched type of murmur beginning with or immediately after the first heart sound. It is interesting to note that experimental work on dogs revealed that this murmur heard directly over the atrium is harsh and rasping. However, when heard over the left ventricle as in human auscultation, it assumes a blowing character and the thrill is often lost.<sup>2</sup> Length and intensity vary with the extent of incompetency. This type of murmur is due to:

- (a) A pathologic or physiologic extracardiac condition which causes a temporary or permanent dilatation of the heart.
- (b) Organic disease of the heart with dilatation and no valve deformity.
- (c) Regurgitation due to a mitral valve deformity, usually of rheumatic origin.

Murmurs may be transmitted to the apex from the base or subternally. This may occur in aortic stenosis, pulmonic stenosis, or interventricular septal defect. These murmurs can usually be distinguished from those of mitral origin since the extra mitral murmurs are generally heard louder at some other area. Another diagnostic aid in localizing the source of the murmur in the mitral valve is that the murmur is well heard in the lung bases, but is poorly heard at the base of the heart or in the neck. The aortic stenosis murmur is, on the other hand, not readily heard in the lung bases, but is heard in the neck and apical region. This phenomenon is better remembered and understood if one recalls that even though considerable lung is interposed between the heart and the posterior chest wall, the root of the left ventricle and the left atrium, over which the murmur is of greatest intensity, lies posteriorly. The point at which we anteriorly approach the heart with our stethoscope is situated proximally to the point of origin of the murmur.

As stated before, causes other than valve deformity must not be considered benign conditions. They often have a graver prognosis than that of valvular damage. Some of these conditions include:

(1) Anemia: Murmurs have disappeared in anemic persons following transfusion, and have appeared following phlebotomies. However, Frielander<sup>7</sup> found no murmur of anemia greater than grade ii plus. He also found that anemia, like fever, was an inconstant cause of a systolic murmur.

(2) Fever: Murmurs are sometimes associated with fever and sometimes subside with the temperature.<sup>7</sup>

(3) Tachycardia: Tachycardia in itself may cause a systolic murmur in some individuals, but in other persons a murmur may be reduced in the presence of a tachycardia. The pulse rate is probably not the influencing factor.<sup>5</sup>

(4) Exercise: Exercise can create murmurs in most normal persons. Frielander<sup>7</sup> recorded the frequency of "effort" murmurs observed by various investigators. The range varied from 90 per cent by Freeman and Levine to 7.8 per cent by Munford. Hyperthyroidism, hypertension, and excitement must also be ruled out before attaching an actual valvular damage diagnosis to the patient. The velocity of ejection, i.e. the vigor and quickness, is probably the cause of these murmurs.

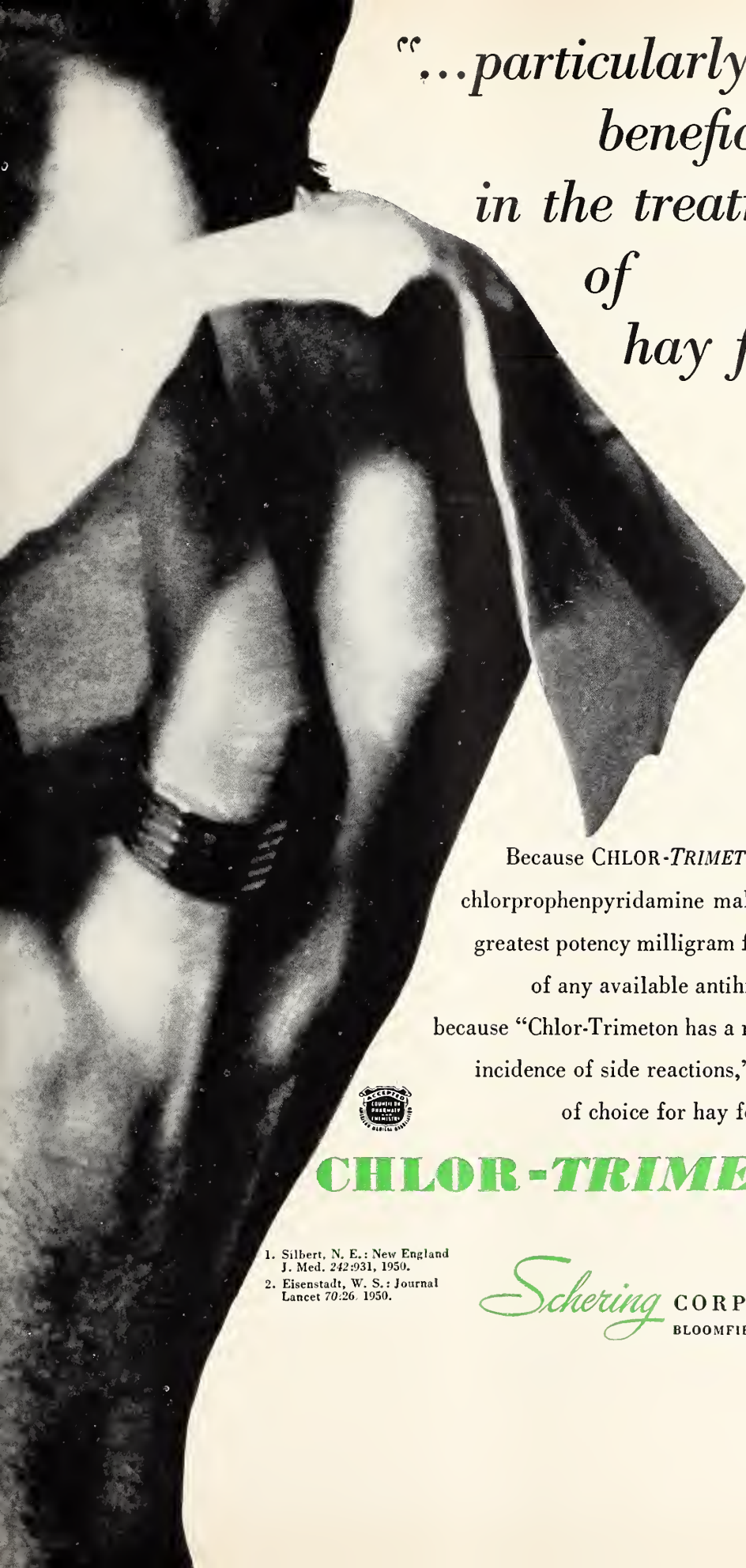
Another cause of apical systolic murmurs is the movement of air in and out of the lung. The heart comprises lung space during diastole, forcing air out of the alveoli. During systole, this space is suddenly reduced and the air, rushing in to fill the rapidly expanding lung, sometimes produces an audible sound, difficult to distinguish from a cardiac murmur.

However, these murmurs can usually be identified by varying respiration. They are always accentuated with inspiration and usually disappear at some stage of respiration, generally with full inspiration.

Friction rubs may cause murmurs that are confused with cardiac murmurs. In many patients, however, murmurs are present and no cause can be incriminated. We can only speculate concerning the etiology of these murmurs. As Sir Thomas Lewis<sup>8</sup> aptly pointed out, a systolic murmur at the apex is an important guide post and should stimulate one to look carefully for other evidence of heart disease.

Most investigators feel that a murmur of less than grade ii intensity is not indicative of valvular disease. However, we have pointed out the significance of non-valvular etiology and must now bear in mind that every loud murmur was of grade i intensity at the beginning. That a given apical systolic murmur may depend upon actual valvular disease is suggested by:

(a) The history of previous conditions commonly associated with heart disease such as endocarditis, rheumatism, chorea, repeated tonsillitis or any alpha-hemolytic streptococcus infection. (Levine<sup>5</sup> will venture a diagnosis of organic mitral insufficiency if there is no other explanation for the murmur, even if there



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is no definite rheumatic history, provided there are other stigmata, i.e. a family history of rheumatic fever or rheumatic heart disease, frequent growing pains, etc.).

(b) The coincident signs of mitral stenosis, i.e. diastolic or presystolic murmur, snapping second pulmonic sound, and loud first apical sound.

(c) The fact that the murmur is holosystolic of a grade ii plus intensity and of a harsh and rasping character.

That the murmur depends upon dilatation of the mitral ring may be suggested by:

(a) The absence of a history pointing to pre-existent valvular disease.

(b) Its development in the course of progressive hypertrophy and dilatation from hypertension or syphilitic aortic insufficiency.

(c) Its appearance in the course of acute infectious fevers not commonly associated with endocarditis, or in grave anemias with great muscular weakness.

(d) Acute heart failure occurring in the early stages of rheumatic heart disease.

That the murmur is physiological may be suspected in young people under 30 years of age, especially in girls but often in boys, when the patient is examined in the recumbent posture and when the murmur is accompanied by a louder murmur in the pulmonary area. Thayer<sup>2</sup> states, "Under these circumstances systolic apical murmurs are very common. The heart sounds are generally normal in character, but the first sound at the apex is followed by a fairly distinct whiff which may or may not be transmitted into the axilla."

Evans,<sup>9</sup> making simultaneous phonocardiographic and electrocardiographic recordings, did precise timing of the murmur. He reached the conclusion that whenever a gap was detected between the first heart sound and the murmur following it, it was proof of the murmur's "innocence," i.e. being physiological. These murmurs are usually best heard with the patient lying on the left side. The murmur diminishes in intensity (never more than grade ii) and may disappear with erect posture and/or deep inspiration.

Masters<sup>10</sup> feels that an apical systolic murmur of grade iii or above should be accepted as evidence of organic valvular heart disease until cardiac abnormality can be disproved. It is important to recognize mitral valvular disease since 30 to 50 per cent of persons who have had rheumatic fever develop it, and 20 to 25 per cent fall victim to subacute bacterial endocarditis.<sup>10</sup> Repeated examinations should be made, keeping alert for persistent and/or diastolic components. Fineberg and Steuer<sup>11</sup> found the average time for development of mitral stenosis was 4.7 years after the discovery of the systolic murmur. These patients should receive antibiotics during certain manipulations and diseases which injure the mucous membranes

and facilitate bacterial invasion. T. Duckett Jones<sup>12</sup> would place these people on prophylactic penicillin continuously.

Fluoroscopy is another tool in the identification of mitral disease. The barium swallow may reveal a posterior displacement of the esophagus by the left atrium. Fluoroscopy may also show right heart enlargement. The EKG may reveal right axis deviation and right ventricular hypertrophy. In some cases the vital capacity may be reduced as much as 20 per cent.

Some other conditions to be considered in the differential diagnosis of apical systolic murmurs are:

(a) Neurocirculatory asthenia. Other symptoms will usually distinguish this condition, but one must be alert. The low diaphragm, which is characteristic of these people, gives the patient a right axis deviation.

(b) Chest deformities and kyphoscoliosis may produce murmurs.

(c) A split first sound may also be confused with a systolic murmur.

#### AORTIC SYSTOLIC MURMURS

Murmurs in the aortic area to the right of the sternum may be classified as follows:

(1) With aortic stenosis in adults and as a result of rheumatic fever.

(2) In dilated and hypertrophied hearts, especially in aortic insufficiency, where, with a rim of relatively normal size, a larger and stronger ventricle is forcing blood into an aorta which is capable of wide dilatation.

(3) (The most frequent clinical cause) Dilatation of the ascending aorta above the valve ring. The four main underlying causes are chronic hypertension, aortic regurgitation, arteriosclerosis, and syphilitic aortitis.

(4) Without obvious cardiac abnormalities, as in anemia, diminished viscosity of the blood, and, not infrequently in young neurotic individuals with throbbing vessels. Loud murmurs are heard in the pulmonic area in this condition.

In summary, where the ventricle is dilated or hypertrophied, wherever the aorta beyond the ring is relaxed or dilated, or wherever the ring itself is narrowed, one may and often does hear a systolic murmur at the aortic orifice.

Obesity will also cause an aortic murmur, possibly by elevation of the diaphragm with distortion of the normal aortic contour. Congenital stenosis of the passage of the left ventricle causes a murmur often better heard over the third intercostal space or over the sternum. Sacular aneurysms of the aorta are occasional causes of systolic aortic murmurs.

The murmur of aortic stenosis is harsh, while the murmurs of other causes are usually of a blowing

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1. Reich, W. J. et al. (1952), A Recent Advance in Estrogenic Therapy. II. Amer. J. Obst. & Gynec., 64:174, July.



nature. These murmurs are often transmitted into the neck, arms, and, as stated before, to the apex. A thrill is often present with this murmur. A stenosed valve frequently has no second sound.

Richard Cabot<sup>13</sup> states, "No diagnosis is satisfactory which rests on the evidence of murmurs alone." Wood and White<sup>13</sup> at Massachusetts General Hospital demanded the following criteria for a diagnosis of aortic stenosis:

- (1) Palpable thrill at the base of the heart.
- (2) Small plateau pulse.
- (3) Absence or diminution of aortic second sound.
- (4) Rough systolic murmur over the aortic area.

Using these criteria, no case diagnosed aortic stenosis between the years 1913 and 1923 failed to reveal the lesion at necropsy. Counihan's<sup>14</sup> recent investigations revealed that the sensitivity of the fingers to vibrations in the range of cardiac murmurs is so far inferior to that of the ear that the elicitation of a cardiac thrill becomes a matter of academic curiosity and yields no information of diagnostic import that is not obtained by auscultation. He feels no reluctance in diagnosing aortic stenosis without the classic thrill.

The Boston Board,<sup>15</sup> in examining men for the army, considered any localized systolic murmur of the aortic area of any intensity, unless extremely slight (grade i-) and dispelled by respiration, as grounds for rejection. The New York Board,<sup>15</sup> however, felt otherwise. Systolic murmurs at the aortic area, if not associated with any other abnormal findings, provided they were localized and not harsh, were not regarded as a cause for rejection. The presence of a thrill and diminished intensity of the second sound, of course, emphasized the importance of such murmurs. Fluoroscopic examination to determine the presence or absence of calcification is often helpful in localizing the source of the murmur.

#### PULMONIC SYSTOLIC MURMURS

The pulmonic area is the most common location for systolic murmurs. Nearly everyone has an audible murmur in this area if he lies down and exhales. If, however, the murmur is of grade ii plus intensity, pathology is very probable.

The cause of the physiological murmur is not known. White<sup>6</sup> speculates that it is probably associated with dilatation of the pulmonary artery under increased pulmonary pressure as in full expiration, with kinking of the artery by change of position, or by other factors leading to dilatation.

Sodeman<sup>16</sup> reports pulmonic systolic murmurs in 60 per cent of children under 14 years of age. It is doubtful that the systolic murmur so often found following exercise is ever more than a grade ii intensity in normal individuals. Frielander<sup>7</sup> does not consider them significant.

Contratto,<sup>17</sup> examining 2,856 college students, found systolic murmurs in 350, or 12.3 per cent. Of these, 208 were physiological, and 127 had murmurs intense enough to watch. These students were allowed unrestricted activity and, during the follow up study, in no case was a diagnosis of valvular heart disease subsequently made. The other 15 patients had pathology.

The Boston Board<sup>15</sup> did not consider systolic murmurs of grade i-ii in the pulmonic area as a cause for rejection, if there was no evidence of heart disease. These murmurs almost always disappeared with full inspiration. A persistent systolic murmur of grade iii or more in the pulmonic valve area was considered cause for rejection.

The physiological murmur is of a blowing character, begins early in systole, and extends through most of it. The murmur is seldom transmitted. The second pulmonic sound is often exaggerated.

Pathological dilatation of the pulmonary artery must always be ruled out. The vessel may be dilated due to pulmonary hypertension secondary to mitral stenosis, left ventricular failure, chronic pulmonary fibrosis, emphysema, or pulmonary endarteritis.

Thyrotoxicosis and congenital defects must also be considered. Congenital pulmonary stenosis demonstrates a harsh systolic murmur, a thrill, and often a marked first sound. This murmur is not generally transmitted, but may often be heard in the lung bases posteriorly.

Patent ductus arteriosus causes a systolic murmur, almost always associated with a diastolic murmur, causing the characteristic "machinery murmur." This is usually better heard to the left of the pulmonic area. Coarctation of the aorta and aortic aneurysms may be located in a position favorable for a systolic murmur in the pulmonic area. Transmission of the murmur is the best auscultatory means of differentiating an aortic from a pulmonic stenosis, that of aortic stenosis being widely and loudly transmitted except to the lung bases where it is heard only faintly, and that of pulmonic stenosis being transmitted not far except to the lung bases.

Two other areas often associated with systolic murmurs must be mentioned. The typical Roger's murmur of interventricular septal defect is best heard to the left of the sternum in the third or fourth intercostal spaces. This is usually accompanied by a thrill and is of a loud blowing character.

When a murmur is heard at the base of the sternum, tricuspid insufficiency must be considered. However, a murmur in this area is usually transmitted from somewhere else.

#### SOME STATISTICS CONCERNING SYSTOLIC MURMURS

Thayer<sup>2</sup> checked apical systolic murmurs in other-



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Murmurs present .....	22	35	12	5
Per Cent .....	56.4	35.7	21.2	19.2

\* None under three years.

Stewart,<sup>18</sup> examining 512 Bristol University Students found: 34 per cent had systolic murmurs, 44 per cent of the women and 30 per cent of the men; 21 or 21½ per cent of the total were of grade ii plus. None were higher. One year later his follow-up revealed 61 new murmurs appearing, while 38 old murmurs disappeared. He felt that three cases which had a combination of apical localization and persistence were practical indications of early mitral disease.

Rednick<sup>19</sup> studied the necropsy material of 268 cases with systolic murmurs. He found valvular incompetency in 44 or 16.4 per cent which was attributed to (1) rheumatic fever, (2) arteriosclerosis, (3) syphilis, and (4) congenital malformations. All of these patients had other signs of cardiac involvement. He attributed 136 cases, or 50.7 per cent, to valvular deformities, i.e. sclerosis, vegetations, or nodules. Thayer<sup>2</sup> and others would question that these would cause the murmur. He associated 18.1 per cent with fever, tachycardia, anemia, or hypertension. In 10 cases, or 3.7 per cent, no clinical or pathological explanation for the murmur was found.

Sodeman<sup>16</sup> reported some interesting prognostic material from insurance studies. They report that a decrease in life expectancy has been found with apical systolic murmurs.

Condition	Mortality rate
Inconstant systolic apical murmur not transmitted..	135%
Constant murmur .....	156%
Pulmonic systolic murmur .....	112%
Constant systolic apical murmur transmitted to the left without a history of rheumatic fever .....	224%
Constant systolic apical murmur transmitted to the left plus cardiac hypertrophy without a history of rheumatic fever .....	476%

Hunter<sup>10</sup> learned that the mortality rate was 50 per cent higher among manual workers with apical systolic murmur than among "white collar workers."

Baker, Sprague, and White<sup>20</sup> did 10- and 15-year follow-ups on grade iv, v, and vi systolic murmurs without diastolic murmurs. Eighteen per cent of these were aortic. Of 187, 155 had died at the end of 10 years, 47.7 per cent within one year. One hundred thirty-one (92.2 per cent) had died of cardiovascular disease; seven of subacute bacterial endocarditis (24 per cent of the deaths among those with rheumatic heart disease); nine of venereal disease, not in the heart; one of uremia, and eight of cerebral vascular accidents.

Per cent of these dead, time of follow-up, and etiological agent:

Etiology	Dead at 10 years	Dead at 15 years
Degenerative	73.5%	98.3%
Rheumatic	40%	75.7%
Uncertain etiology	50%	80%

Shapiro,<sup>21</sup> in 1939, felt that pathology could be ruled out with 98 per cent accuracy by x-ray, intensity, location, and with a careful history. He demanded the following criteria for a physiological diagnosis: (1) not transmitted, (2) short, (3) no obscurity of the first sound.

## CONCLUSIONS

Any systolic murmur must be considered as possible evidence of pathology. A thorough investigation is mandatory for every patient presenting such a murmur. With the present tools and information available, a physician can be accurate in identifying pathological lesions. Every case must be managed and followed according to its own merits. Aortic systolic murmurs are much more significant than apical or pulmonic. Extreme care must be taken not to terrify the patient with the belief that he or she has heart trouble when the murmur is physiological.

## SUMMARY

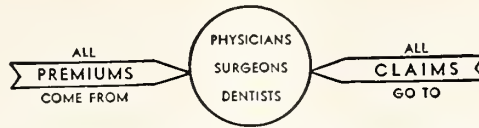
1. The problem of the systolic murmur is discussed.
2. The mechanism of a murmur is considered.
3. The terminology for systolic murmurs is expressed.
4. Murmurs are discussed by their location with regard to pathology, etiological possibilities, and associated diagnostic aids.
5. Authorities and statistics on the frequency and the prognosis of patients with systolic murmurs are quoted.

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KARL J. WAGGENER, M.D.



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## BOOK REVIEW

*Diseases of Metabolism. Third Edition. Edited by Garfield G. Duncan, M.D. Published by W. B. Saunders Company, Philadelphia. 1179 pages, illustrated. Price \$15.*

This excellent book discusses both normal and pathologic physiology, clinical features, and therapy of the diseases of metabolism. Of particular value to the clinician are the sections on water balance, obesity, gout, diabetes mellitus, and diseases of the thyroid. —H. L. D.

### FIVE-YEAR SCHOLARSHIP TO KANSAN

A five-year scholarship which carries an honorarium of \$30,000 was awarded recently by the John and Mary R. Markle Foundation of New York to Dr. Charles F. Kittle, instructor in surgery at the University of Kansas School of Medicine. Dr. Kittle, with other members of the cardiovascular laboratory, is studying the surgical repair of faulty valves of the heart. He is the first member of the Kansas faculty to receive a Markle award and is one of 21 physicians so honored this year.

The foundation was established in 1927 by John Markle, a Pennsylvania coal operator, with an endowment that increased to 16 million dollars when he

died. During the last four years, it has expended \$3,200,000 in grants to young physicians interested in research.

Dr. Kittle is a graduate of the University of Chicago. He began postgraduate study at Kansas University in 1948 and received a master of science degree in surgery in 1950, after which he began teaching.

The annual meeting of the American Medical Association will be held in New York City, June 1-5, 1953.

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# THE JOURNAL

*of the*

## KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

Volume LIV

JUNE, 1953

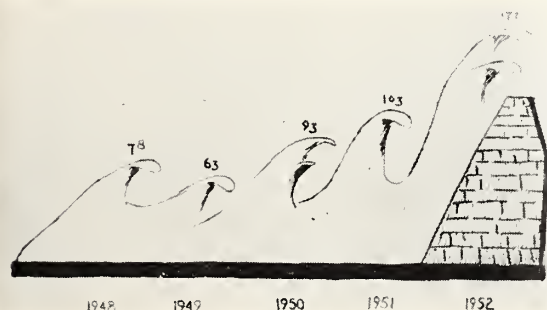
No. 6

### Poliomyelitis—A Selective Five-Year Review

H. O. Marsh, M.D.,\* and Cline D. Hensley, Jr., M.D.\*

Wichita, Kansas

The physicians of Kansas have been confronted each year with an ever-rising tide of polio which threatened seriously, in the past year, to swamp existing hospital facilities. The increasing enormity of the epidemics is reflected by the mounting census of acute polio on the St. Francis Hospital Orthopedic Service in the past five years (Graph 1). The year



Graph 1. The rising tide of polio.

1952 produced the worst storm of polio ever experienced in Kansas and in the United States. That storm has now blown itself out, and the brief lull before this summer's storm again breaks over our heads presents a propitious time to review some of the known facts of etiology, transmission, pathology and treatment.

There is little opportunity for reflective study and speculation once the storm is upon us, for then the burden of caring for the afflicted, calming public hysteria, and impassionate discussion of newspaper propaganda is so great that we, to function calmly at peak efficiency, must have well formulated plans and procedures with which to work. The formula-

tion, condensation, and review of present day poliomyelitis theories and treatment provide the motivating force behind the brief analysis of the problem presented here.

At the turn of the twentieth century, "infantile" paralysis was a disease of infants. The vital statistics for New York in 1916 revealed that 80 per cent of the poliomyelitis cases reported were in patients under five years of age, while in 1949 the same state reported that less than 30 per cent of those stricken were in this age group. "Childhood" paralysis might well be a more fitting name for the disease as we now know it.

The attempt to put down in cold, analytical figures some of the general impressions gained through the years proved to be, after careful study, an impossible task. An increasing incidence of abortive and non-paralytic polio has been definitely in evidence and originated, no doubt, in the sharpening diagnostic acumen of all doctors to the milder symptomatology of this disease. In this series there was a distressing yearly increase in incidence among pregnant women. No one has, as yet, ascertained accurately the relative frequency of infection between pregnant and non-pregnant females; the reports in the literature estimating this ratio vary from 4:1 to 8:1.

The exact relationship that exists between the severity of paralysis and the patient's physical activity during the prodromal stage is an oft disputed point. The clinical impression of a definite cause and effect relationship existing between these two factors has slowly crystallized. In epidemic times the restriction of physical activity on the part of any child who is not up to his physical par would seem to be a wise and safe precaution. Protection

\* From the Wichita Clinic, Wichita, Kansas.



by insurance against the economic loss occasioned by this disease has become increasingly common, and an estimated 30 per cent of the patients seen in 1952 carried this form of protection.

One of the most fascinating chapters in all the history of medicine and medical research is slowly but surely being written before our eyes. Under the combined forces of private research agencies, the National Foundation for Infantile Paralysis, universities, government supported research, and independent clinical investigators, the secrets of the etiology and transmission of this epidemic and endemic disease are being tracked down through the labyrinth of scientific fact and popular fiction.

The portal of entry into the human body for the infecting agent, one of the smallest viruses known, has never been satisfactorily settled. It is believed that the virus probably breaches the defenses of the body by the oral route because of the following facts.

(1) Early in the disease, at least experimentally, the virus can be cultured at all levels of the gastrointestinal tract. (2) The virus can be isolated from the feces in 100 per cent of the cases of poliomyelitis during the first week, 70 per cent during the second week, 50 per cent during the third and fourth weeks, and, in a significant proportion, positive cultures continue through six to eight weeks. (3) The olfactory bulb rarely, if ever, harbors the virus—this would appear essential if the olfactory passage were the gateway for the disease. (4) The virus can routinely be cultured from oral-pharyngeal swabs during the first few days of the disease.

A major accomplishment was achieved two years ago when the existence of the three broad immunological types of virus was proved by studying 100 different strains of this organism. In this study, the Brunhilde type I represented 85 strains, Lansing type II represented 12 strains, and Leon type III, three strains. This multiplicity of virus strains and types serves to underscore the difficulty of developing a vaccine uniformly effective against all viral gradations.

That a viremia occurs in the course of this disease in man has only recently been demonstrated. Prior to the discovery of this missing link in the chain of pathogenesis, most investigators were firmly convinced that such a state must exist at some point in the disease and that the onset of the signs and symptoms of polio probably heralded the disappearance of the viremia, and thus this clinical state eluded detection.

The period of communicability of poliomyelitis has long posed a fascinating enigma for the epidemiologist. The best available information indicates that maximum contagion exists for three to five days, which period covers the latter days of the

incubation period and the initial days of the acute illness. The incubation period varies within wide limits, the shortest reported time being 3 days and the longest 35 days; the average is 10.

Tonsillectomized children suffer a higher incidence of the disease, particularly the bulbar type. This fact should be borne in mind, for discretion would seem the better part of valor and tonsillectomies should, therefore, be postponed during epidemic periods.

Flies have been frequently and vociferously condemned by clinicians and investigators alike as the carrier and silent in-between host for the virus. Circumstantial evidence furnishes the only connecting link between the fly and the disease at present, as actual scientific proof has not sustained this accusation. Investigators recently succeeded in producing this disease in chimpanzees by feeding food contaminated by virus-carrying flies. A wide gulf looms between this experiment and the transference and application of this knowledge to human beings. This avenue of investigation must be much more completely explored before the role of the fly can be finally established.

Antibody tests have revealed that 80 to 90 per cent of adults have at some time suffered a clinical or subclinical attack of polio. The incidence of infection, therefore, is approximately the same as for measles. This establishes the disease as highly infectious but with a far lower morbidity rate and mortality rate than previously believed. Bearing in mind the above facts and the prevalence of positive fecal cultures in all members of a family in which one member displays the clinical disease, the wisdom and desirability of strict isolation and quarantine would appear questionable. Logically, a modified isolation technique might be more desirable, with careful handling and disposal of the contaminated feces and the prevention of droplet infection in nursing personnel during the first few days of illness.

The past two decades have witnessed the generation of an intense interest in polio, both in public and medical circles. This interest has been one of the primary forces responsible for the widespread experimental and clinical investigation into the pathology, pathologic-physiology and bacteriology of the disease. One of the least heralded, but to all thoughtful investigators the most important forward stride in this phase of the problem, has been the laboratory growth of the virus in roller tube cultures and in the developing chick embryo. Prior to this advance in our basic knowledge, at least two monkeys had been required for basic cultures. The cost of the animals alone imposed an almost prohibitive financial burden on general research, and the limited number of monkeys available further re-

strained, with iron bands, research within narrow limits. Such restrictions were swept aside with the fundamental laboratory discovery of these methods of culture.

The motor nerve cells of the cervical and lumbar enlargements of the spinal cord seem to possess a special susceptibility to the ravages of this virus. This vulnerability fostered a widespread false belief, a decade ago, that the infection was limited to the anterior horn cells of the spinal cord. This erroneous concept has been exploded, and we now know that other areas of the central nervous system may be damaged, not excluding the motor cortex of the brain. Damage to the hypothalamic areas and basal ganglia also occurs and probably accounts for the appearance of personality changes, nervousness, and emotional instability. In addition, the vital centers of respiration, circulation, and the nuclei of the cranial nerves located in the brain stem are all too frequently involved.

Bodian, working with primates, demonstrated that 30 per cent of a physiological unit of neural tissue must be destroyed before clinical evidence of paralysis or paresis is detectable. Clinical observation of critically ill children who recover after extensive temporary paralysis would suggest that this is true in the human being.

Polio must, therefore, be considered a generalized infection of the human body with an initial general infection of the gastrointestinal tract followed by a viremia and finally concentrating in the central nervous system. Here in the central nervous system the virus has a predilection for certain areas which bear the brunt of the assault. The early generalized involvement offers an adequate explanation for the frequency with which one sees a combination of spinal and bulbar symptoms in this disease.

Recent studies have demonstrated that patients stricken with the paralytic form of the disease develop neutralizing antibodies soon after the onset of symptoms. Three years later these patients still maintained a very high level of antibody titer against the particular type of polio virus that had caused their disease. Further studies of these individuals revealed the frequent presence of significant antibody titer against a second type of poliomyelitis virus. An antibody titer against one viral type, and occasionally two, was also discovered in the controls where no previous history of polio had been obtained. The logical conclusion follows, that if an individual has an antibody titer against two types of polio virus but lacks an antibody against the third type, that individual cannot be considered immune. A second conclusion also appears justifiable; a true, active, long lasting immunity develops following a definite

clinical infection, and a similar immunization can probably be produced with a vaccine.

The diagnosis of polio during the height of an epidemic is often made too easily. In preceding years, an estimated error of 20 per cent has existed in the diagnosis of polio, according to our state public health authorities. This means that for each 100 cases admitted with the diagnosis of polio, 20 were suffering from some other mimicking condition. This experience is not peculiar to Kansas; two other states where careful post-epidemic studies were carried out have reported remarkably similar findings.

A 1948 analysis of 100 hospital admissions in West Virginia revealed that 23 patients were suffering from some disease other than polio. The Los Angeles County General Hospital admitted 304 cases of suspected poliomyelitis in the first six months of 1949. Re-evaluation after a few days sustained the diagnosis in only 149 cases, or 49 per cent. An epidemic of mumps was raging during this particular season, and many cases of mumps meningitis had been misdiagnosed. The presence of this epidemic, plus the usual diagnostic difficulties that exist, accounted for this low diagnostic accuracy. Such a remarkable parallelism of experience vividly illustrates that the difficulty of diagnosis is not limited to our state boundaries and should serve as a mental spur to remind us to keep our diagnostic guard up and constantly eye with suspicion all cases diagnosed as "poliomyelitis."

That the diagnostic error should be so high is readily understandable because of four facts. (1) Many diseases mimic polio closely, and the diagnosis is often debatable except in paralytic cases or cases in which antibody tests have been run on the blood. (2) The tremendous public pressure and hysteria which grip the nation more firmly each year produce an unfortunate combination of circumstances which the family doctor is almost powerless to hold in check long enough to evaluate each case from a differential diagnostic standpoint. Cases are frequently admitted to hospitals under these pressures before the diagnostic possibilities can be thoughtfully weighed. (3) Abortive and non-paralytic cases recover without the detection of a specific neuromuscular insult. This group contains many similar clinical entities which only the passage of time strips to their true colors. The ratio of abortive cases to the more severe clinical infections has been variously estimated, and one commonly accepted figure is 5:1. (4) The prevalence of polio insurance has also, unfortunately, exerted a direct effect on the diagnosis of polio. It is not economically feasible nor medically sound to ask the family to assume the financial responsibilities of hospital and medical



care if the presumptive diagnosis of poliomyelitis falls well within the limits of probability.

The early characteristic symptoms of polio are non-specific and familiar to all and consist of severe headache, general malaise, nausea and vomiting, sore throat, and muscle spasm with pain in the neck, back, and hamstring muscles. The early associated physical findings are characterized by a board-like rigidity of the neck and back, the positive straight leg raising test (Kernig sign), "head drop" on raising the shoulders from the bed, "tripod" sitting posture, and an early increase and later decrease in activity of the deep and superficial reflexes. Bulbar cases present the alarming findings of a change in vocal tone, difficulty in swallowing with a pooling of secretions in the throat, irregular respirations, and a restless, apprehensive patient.

Lumbar puncture and the careful analysis of the spinal fluid obtained furnishes presumptive but not conclusive evidence of polio. The white cell count is elevated during the first week of illness, except for 5 to 10 per cent of the cases in which no leukocytosis is found. The elevated cell count persists about 4 weeks, gradually returning to normal. The protein of the spinal fluid is consistently elevated, and this elevation is maintained for 8 to 10 weeks, persisting long after the leukocytosis has subsided.

The differential diagnostic considerations are of paramount importance if we are to avoid being trapped by the fallacy that all cases of a particular pattern in a particular season of the year are polio. We must be certain that a general infectious process, not polio, which will respond to specific therapy, does not slip through our fingers and fall back into the general diagnostic pool of polio, or that a tumor, cerebral or spinal, which admits of surgical correction is not overlooked. Therefore, the differential diagnosis must bring under the cold analytical light of medical evaluation such diverse conditions as tuberculous meningitis, brain tumor, lymphocytic choriomeningitis, Coxsackie disease, Guillain-Barre, hysteria (which in our experience occurs several times each year), peripheral neuritis, encephalitis, infectious mononucleosis, polyneuritis, and many others. Careful attention to the history, onset, and progress of the disease, the patient's physical and general appearance, and the results of the spinal fluid examination should differentiate these diseases except in the most obtuse cases.

Medical custom has arbitrarily divided the clinical course of polio into three states: the acute, the convalescent, and the chronic. There exists, however, no sharp dividing line for delineating these three periods of the disease. The acute phase of 7 to 14 days exists during the period of temperature elevation and is the time of crisis, the convalescent

stage persists for the ensuing 18 months, and the chronic stage, thereafter. During the acute stage, the fate of the seriously ill patient sways in delicate balance between life and death, and the future physical handicap teeters precariously on the same delicate scales. This discussion will be limited mainly to the acute period.

Gamma globulin, regardless of our present thinking, will loom large on the horizon as a major factor in the medical therapy of polio in the next few months. This will be especially true if an epidemic in any way comparable to that of last year strikes once more. It is pertinent, then, to review a few of the problems and facts regarding gamma globulin now and prepare ourselves for the summer's issues.

If gamma globulin were to be administered to all of the estimated 40,000,000 children in the "polio age," approximately 40,000,000 bleedings would be necessary to obtain this quantity of material. One average bleeding of 500 cc. furnishes only 7 cc. of gamma globulin. The problem of procuring this multitude of donors, a Herculean task alone, is rendered additionally difficult when we consider that the required amount must be superimposed on the gamma globulin requirements for measles and infectious hepatitis. To satisfy this overwhelming demand, there will be available in 1953, from all sources, only 6,000,000 to 7,000,000 cc. of gamma globulin. This will furnish only 800,000 to 1,000,000 doses, calculated on the basis of an average of 7 cc. per patient.

This supply of the antibody-carrying portion of the blood is to be distributed through the State Board of Health working in close liaison with the Office of Defense Mobilization, the latter office coordinating and integrating the program for the whole of the United States. Present plans for state allocation are based on a formula of 40 cc. of gamma globulin times the median number of clinically diagnosed cases during the five years from 1947 through 1951. The material so allocated is to be used for the intimate contacts of clinically diagnosed cases. The major portion of the national reserve will be held for use in epidemic areas or emergency situations.

Hammon and his fellow investigators were careful to underscore, in their preliminary report on gamma globulin, the fact that immunity was not conferred during the first week following administration. The severity of the paralysis in children who developed the disease during this seven-day period may, however, have been modified. Clinical protection of a high degree was found to exist from the second week through the fifth week. The duration and level of immunity following the fifth week is conjectural, and a monumental task lies ahead to

determine how long a clinically useful degree of safety exists under the protective umbrella of gamma globulin.

We, as physicians, will shoulder a burden of public pressure this summer as the public seeks, without regard for scientific facts, this new safeguard. Each parent will demand for his child, without consideration for state or federal regulations, the one known polio preventive. The problem of gamma globulin will, fortunately or unfortunately, be solved in a great measure for us by the general lack of availability.

Almost without exception, clinical and experimental investigators in this field firmly believe that the final solution exists not in the development of a passive gamma globulin immunity but in the development of an active immunizing agent. This goal, they estimate, can be reached within two years. Salk et al have recently published some most encouraging work along this latter line of investigation. These investigators, working carefully with well controlled experiments, were able to produce with one vaccine a high level of antibody titer against all three types of polio virus in human subjects. The short term follow-up studies on these vaccines suggest that the antibody titer thus produced is comparable to that developing after a natural poliomyelitis infection both as to duration and level.

The virus used for this vaccine was grown in rolling tube cultures of monkey testicular or kidney tissue inactivated with formaldehyde and incorporated in a water-in-oil emulsion. This report is most encouraging, but we must temper our enthusiasm and heed the authors' warning that these results do not mean that a practical vaccine is at hand. Much more work is needed to establish the safety of such vaccines, to determine whether these results can be reproduced with certainty, and to establish feasible methods of producing safe new batches of vaccine.

The fundamental treatment of polio during the acute stage will continue, therefore, to rest on sound medical foundations whose footings go down to the solid bedrock of good supportive therapy. The patient's fluid and electrolyte balance is paramount in importance and must receive daily painstaking analysis. The blood potassium level has been of steadily increasing interest since the dawning realization of the essential relationship between this ion and vital body functions. Sedation is utilized when absolutely necessary, and phenobarbital has proved most effective. The symptomatic administration of salicylates, to control temperature elevations, and penicillin, to ward off intercurrent infection, is routine.

Kenny packs are utilized as soon as the child has been guided safely through the worst of the turbulent rapids of the critical stage. This is continued

until the stiffness and pain have been relieved, and the packs have consistently proved their worth as the most efficacious method of relieving discomfort. The packs aid secondarily as a prophylactic measure in preventing joint deformities by necessitating the proper anatomical alignment during their application and use. Unremitting vigilance must be maintained over the positioning of patients, for contractures may insidiously appear and progress before your eyes. Pillow supports, foot boards, splints, and braces are called into service when additional help is needed to maintain correct anatomical relationships. Hydrotherapy in the Hubbard tank is instituted when the temperature subsides to normal, and the exercising of weakened muscles and the systematic stretching of tight muscles and joints are seriously undertaken at that time. Drugs for relieving muscle pain and spasm, such as Priscoline, Etamon, Prostigmin, and the curare-like drugs Tolserol or Mephenesin, have been dropped from our armamentarium after uniformly disappointing results.

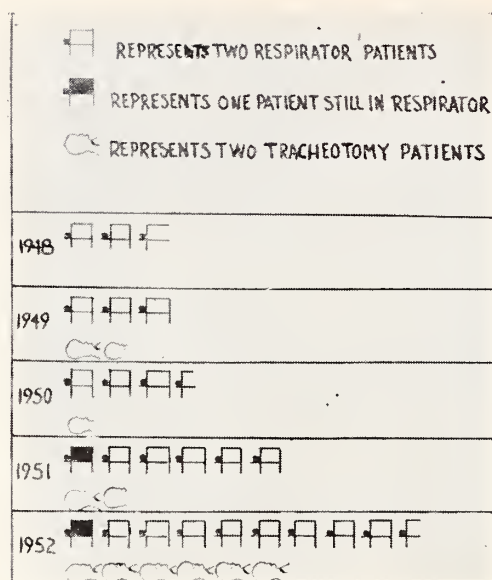
The chest respirator, the rocking bed, the electrophrenic respirator, positive pressure breathing, tracheotomies, and postural drainage, in addition to the regular Drinker type respirator, have revolutionized the treatment of respiratory failure into a highly technical procedure. Careful consideration of this problem resulted in the formation of an informal polio team during the past epidemic to meet this challenge of increased technology. Each patient on the service was treated on an individual patient-physician relationship unless a serious problem of respiratory difficulty, deglutition, or maintenance of body health and nutrition over a prolonged period of time supervened. Confronted with a crisis of this nature, the group knowledge was integrated in order that all therapeutic measures of value would be available to the patient.

The orthopedic member of the group directed his attention toward the control of muscle spasm and pain, the treatment of incipient muscle contractures and joint deformities, and the prescription of supportive and corrective splinting.

The internist or pediatrician supervised the regulation of fluid and electrolyte balance, adequate caloric intake, and therapeutic and prophylactic medications. The usually difficult decision of placing a patient in or weaning the patient from the respirator was decided by group discussion if at all feasible.

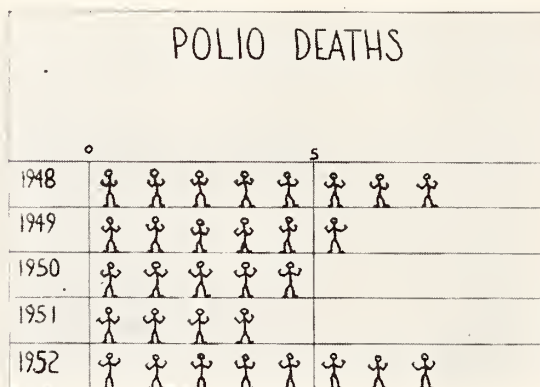
Tracheotomies, tracheal aspirations, and bronchoscopy were performed by a consulting otolaryngologist. The number of tracheotomies performed on this service during the past few years has increased (Graph 2) since Galloway et al published their excellent report in 1949. The mortality in our tracheotomized cases has been high, as would be expected





Graph 2

in such desperately ill patients, but gratifying life-saving results have also been witnessed. This procedure will continue to be used now that its worth is established, not as a last ditch, stop-gap measure, but as an aggressive therapeutic procedure. We have not experienced any deleterious complications from these tracheotomies, and we believe that this procedure has contributed materially to our declining mortality rate (Graph 3).



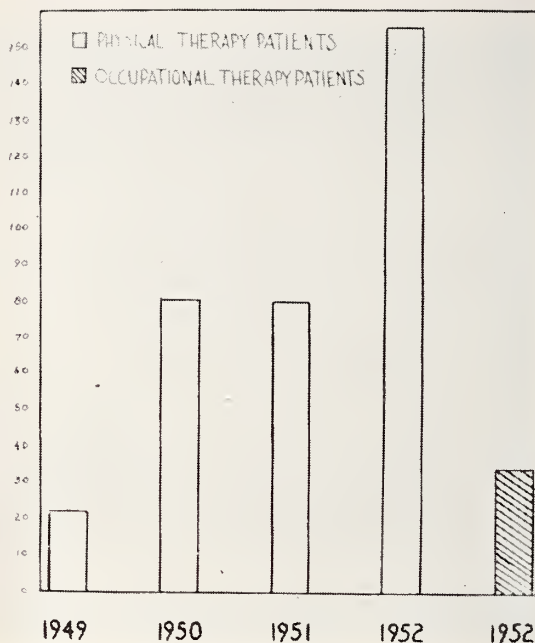
Graph 3

A urologist co-operated closely on a consulting basis as urinary disturbances were frequent. This resulted in a welcome drop in cystitis, urethritis, urinary retention, and other avoidable or correctable urological complications.

This close medical co-ordination has been extremely beneficial to the patients and has been highly satisfying to those working directly with these many-sided problem cases. A definite feeling of security develops with the knowledge that a co-worker is

available who is specifically versed in any thorny problem that may confront the patient during the time of crisis.

The problem of rehabilitating the convalescent and chronic polio patients through physical and occupational therapy has mushroomed to ever-increasing importance (Graph 4). Careful muscle re-educ-



Graph 4

cation, muscle resistive work, protection of weakened muscles by braces and splinting, hydrotherapy, electrical stimulation, and a multitude of other devices are called into service to cajol weakened muscles to maximum strength.

Each handicapped patient, prior to his hospital release, must have his status carefully evaluated against the exacting daily physical requirements of home and wage-earning existence. Patients whose physical remnants prove inadequate to meet such demands must be helped by braces, crutches, and assistive devices and must be educated in special physical tricks to overcome these problems. Surgery may be of cardinal importance in solving a critical need after the physical handicap has stabilized. It is gross neglect and cruelty to discharge a patient with a pair of crutches and a set of braces without this fundamental rehabilitative preparation for daily life. This rehabilitation of the seriously handicapped is a prolonged and arduous undertaking which often extends over several years. The program is terminated when the patient has established his maximum efficiency by utilizing all the physical, medical, and psychological means available.

## SUMMARY

Poliomyelitis, the dread summer disease of this nation, is assuming ever-increasing proportions. The age incidence among those afflicted has steadily risen and, correlated with this, there has been a high incidence of polio among pregnant women. Gamma globulin has, so far, furnished our only offensive weapon in the battle to save lives and decrease physical injury. A vaccine to immunize effectively against polio is a real possibility and will probably be available within two years. This development should effectively bring to an end the great polio epidemics that we have witnessed during the past 50 years. Technological advances in our basic knowledge of fluid and electrolyte balance, tracheotomies, respirators, rocking beds, and rehabilitative procedures have, so far, provided us with our finest defensive weapons. Adequate medical coverage of the seriously ill polio patient is best achieved by a team of physicians, each of whom has special training and interests in a specific facet of this complicated problem. This alliance of forces will result in lessening physical damage to those afflicted, increase the "salvage" of those severely handicapped, and decrease the number condemned to a life totally dependent on respiratory assistance and hospital care.

There has slowly developed over the past years a major medical need in Kansas for a polio center for those unfortunates shackled permanently to a respiratory aid. Each passing season has deposited a few more hopeless cripples on the present hospital load, and for this problem the existing hospital fa-

cilities were not conceived and are grossly deficient in trained personnel. Hospitals cannot remain yoked under this burden indefinitely, and a state center for these individuals has become a real necessity. The bright spot rising on the horizon of this whole picture of devastation and waste is the buoyant hope and belief that in the near future an active vaccine will be produced.

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"In essence, the struggle throughout the world today and in our own country is a struggle between two philosophies of government—between those who believe in government from above down and those who believe in government from the bottom up. Put another way: it's a struggle between those who put their primary faith and reliance in a few experts, supposed supermen government executives, and so forth, at the top, as against those who put their primary reliance and faith in the good sense and capabilities of ordinary people, if genuinely free. . . .

"A dictatorship exists when any man or group or bloc, even if it be a majority, imposes its will without any reservation of rights for the opposition, or the minority. A federation exists when people establish a mechanism whereby some group or party can come to power and govern, but certain rights are reserved for the opposition, including the right to try to become the governing group."

—Hon. Walter H. Judd, M.D.

All progress is made by men of faith who believe in what is right, and, even more important, actually do the right in their private affairs. You cannot add to the peace and good will of the world if you fail to create an atmosphere of harmony and love right where you live and work.

—Thomas Dreier



# Renal Lithiasis and Recent Concepts in Treatment

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The etiological factors associated with the formation of renal calculi have been stressed more frequently in recent years by urological surgeons. With the high incidence of recurrent calculus formation it is a known fact that the surgical removal of the calculus is but one phase in the management of the patient with renal lithiasis. Therefore, unless the causative factor or factors are known and corrected, a high incidence of recurrent calculi will be the case. The following are some of the contributing etiological factors which need investigation.

## VITAMIN A AND DIETARY DEFICIENCIES

There are certain geographic regions which are known as "stone areas." In these areas there is an absence or deficiency of certain essentials in the diet. Both clinical and experimental observations have demonstrated the relationship between stone formation and certain diet deficiency. Diet deficient in Vitamin A for an extended period of time is a known cause of stone formation in either or both kidneys. Studies for Vitamin A deficiency should be made in cases of renal calculus. Patients with a subnormal dark adaptation are suggestive cases.

## HYPERPARATHYROIDISM

The relationship of hyperparathyroidism to renal calculi was first established in 1924. Braasch<sup>1</sup> found that hyperparathyroidism was the etiological factor in less than 0.2 per cent of the cases at the Mayo Clinic. In 1934, Barney and Mintz<sup>2</sup> reported a series of cases in which the diagnosis of hyperparathyroidism had been substantiated by surgical intervention. In 61 per cent of the cases, calculi were observed in the urinary tract. They concluded that hyperparathyroidism is responsible for about 4 per cent of the cases of renal lithiasis. In approximately 70 per cent of the cases of hyperparathyroidism, stones may be present, and in about 38 per cent the patient may have demonstrable pathological changes in the bones and urinary tract.

Maybe the actual incidence of hyperparathyroidism is higher than urologists have presumed in the past. An intensive study should be made in all patients with renal lithiasis to rule out the possibility of hyperparathyroidism as a causative factor. The levels of the serum calcium and serum phosphorus in the

blood should always be determined. If there is an elevation of serum calcium and a lowering of the serum phosphorus, additional studies of calcium balance are indicated. The Sulkowitch test detects the gross presence or absence of hypercalcinuria, while a roentgenologic survey may reveal bone lesions compatible with the diagnosis of hyperparathyroidism. When the diagnosis is made, exploration of the parathyroid glands is advisable for the removal of the tumor, which is usually an adenoma.

## INCREASED URINARY CALCIUM EXCRETION (HYPERCALCINURIA)

In all cases of renal calculi a study of the excretion of calcium in the urine should be a routine procedure. There are various factors which influence the excretion of calcium, depending on the amount of calcium and phosphorus ingested, the intake of Vitamin D, and the acidity of the acid ash in the diet. On a normal diet approximately 200 mg. of calcium is excreted in the urine daily. The excretion, when diet is low in calcium and phosphorus and the ash is neutral, varies between 100 to 150 mg. When the intake of calcium and phosphorus is increased, the excretion of calcium may attain 300 mg. daily. Patients who have or have had urinary calculi may show a high urinary calcium excretion while the blood calcium and phosphorus levels are normal. No exact cause has been found for this.

## INFECTION

There is a definite relationship between urinary tract infections and calculus formation. In 1932, Bugbee<sup>3</sup> demonstrated the relationship between pre-existing pyelonephritis and the formation of renal calculi. In some cases it is difficult to know if the infection was first and a stone developed—or whether a stone developed and was then the cause of the infection. Stones have been known to have bacteria in their nuclei. Complete bacteriological studies are essential in all cases of stones. In each case it should be determined if the organism possesses the power of splitting urea.

## FOCAL INFECTION

In 1921, Rosenow and Meisser<sup>4</sup> demonstrated the specific ability of the streptococcus to produce urinary calculi. The pulp of dogs' teeth was inoculated with streptococci isolated from the urine of patients with calculus disease. Following this, calculi developed

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in the dogs, and the streptococci were isolated from the urine. In view of this finding, all foci of infection should be eradicated.

#### STASIS

Stasis is definitely associated with formation of renal calculi. Through stasis the urine is usually alkaline, and bacteria grow rapidly. Stasis should be corrected and eliminated during the operative procedure for stone removal.

#### METABOLIC DISEASES

Gout is a metabolic disease in which excessive amounts of crystalloids may be present in the urine. A patient with gout may form a renal calculus or experience a renal colic due to the passage of a small stone or showers of uric acid crystals. A blood uric acid determination is made in each case. Proper dietary management is necessary in these cases. Cystinuria is a familial disease caused by derangement of intermediate protein metabolism. Oxaluria, xanthinuria, and phosphaturia also can be the cause of stone formation in either or both kidneys.

#### RANDALL'S THEORY

Randall<sup>5</sup> showed that there were plaques of calcium salts deposited in the interstitial kidney tissue. At first they were covered with epithelium which shut them off from the cavity of the calyx, but later the epithelial covering was destroyed, exposing the plaques to the urine contained in the calyx. When this happened there was a tendency for urinary salts to be deposited on the plaques, thus forming a small calculus.

#### STONES IN PREGNANCY

Renal calculi can be produced experimentally by estrogen therapy. Therefore, it is thought that estrogens may have some relation to calculi in pregnancy.

#### RENAL LITHIASIS IN RECUMBENT PATIENTS

Urinary calculi often are found in persons suffering from bone injuries, or other conditions requiring immobilization for prolonged periods. Generally, these calculi are renal in origin and tend to be bilateral. This immobilization usually causes the stones to develop because of impaired urinary drainage, with or without infection, and produces changes in the calcium metabolism. Jones and Roberts<sup>6</sup> (1934) showed that immobility causes local decalcification of the bones, and demonstrated by x-ray that generalized disuse depletes the calcium of the bones. It seems, therefore, that renal stones in these cases are the result of skeletal decalcification, and are comparable to stone formation seen in connection with hyperparathyroidism.

#### PATHOLOGY OF STONES

The most common type of renal calculus laid down in sterile urine is the crystalline oxalate stone. It is a light brown color, is dense and hard, and is covered with sharp shining crystals. Uric acid and cystine calculi are also formed in sterile urine, but are rather rare.

The most common calculi formed in infected urine are the phosphatic. They are a dirty greyish-white color. They are more friable and grow more rapidly. Stones composed of calcium carbonate are rare, although small quantities of this salt are found in many phosphatic calculi. These are white, hard and dense.

The most common type of renal stone is the mixed phosphatic and oxalate calculus. It can occur in infected or sterile urine. All stones are more or less a mixed type.

Soft concretions can be found but are rare. Some of the concretions are fibrin, amyloid concretion or bacterial calculi.

Urinary calculi can be of two types—those formed in alkaline urine and those formed in acid urine. The phosphate and carbonate stones develop in an alkaline urine, the oxalate and uric acid in acid urine.

#### SYMPTOMS

Stones in the upper urinary tract give different symptoms which in part depend on the existing pathological condition, such as obstruction, local irritation, and associated infection. Stones in a kidney which do not cause obstruction may attain a great size and result in serious kidney damage before they are discovered. A stone which is migrating or which causes an obstruction at the uretero-pelvic juncture or in the ureter will cause severe symptoms. This severe pain is known as "renal colic." The onset is usually sudden, severe, and agonizing. This pain is in the flank area and can radiate across the abdomen, upward or down along the course of the ureter.

Various reflex symptoms are observed. They are most common when the pain is severe. There may be a fall in blood pressure, the skin can be pale and covered with cold sweat, and the pulse thready, small and rapid.

Another group of symptoms may be referred to the gastro-intestinal tract. Nausea and vomiting are common. Constipation or diarrhea can occur, and often one finds a diffuse abdominal distention. A great deal of gas is seen in the intestinal patterns on the plain film of the abdomen.

Other reflex symptoms are an increased frequency of urination or pain in the genitalia. A renal colic usually lasts a few hours and continues in a milder state for several days. During the intense pain, an injection of morphia or some other sedative is needed. The urine usually contains a little blood. Hematuria



is an important sign, as it generally indicates that the pain is renal in origin.

The most common and typical pain from a renal calculus without infection is a dull fixed pain in the loin. The pain is increased by exercise or jolting and often relieved by rest. The urine often shows some blood.

The symptoms of an infected renal calculus are pain of varying degrees in the loin, urine showing blood with pus, and perhaps temperature elevations. Therefore, the most constant complaints are of pain, hematuria and pyuria.

#### EXAMINATION

Symptoms referable to the gastro-intestinal tract, loin aches or colic, and the presence of red blood cells and pyuria warrant a complete urological study. Symptoms typical of renal calculus are missing so often or may be so mild that many patients have been subjected to unnecessary appendectomies and gall bladder operations, or even explored for a supposed intestinal obstruction which was due to a reflex ileus from a stone.

A complete urological investigation includes a careful history, physical examination, urinalysis, plain roentgenogram and pyelograms with cystoscopy. Approximately 10 per cent of small renal calculi are not visualized in plain films. Therefore, for more complete information, intravenous urography is essential or cystoscopy with ureteral catheterization and pyelography. One should know the functioning ability of each kidney, as well as the extent of pathological change in each, and the anatomical type of kidney. A stone may be present in one kidney while the other kidney may be hypoplastic, ectopic, seriously injured by some disease, or a congenitally anomalous kidney. Roentgenographic examination and pyelograms should include both kidneys.

The treatment of renal lithiasis is both medical and surgical. The aim of medical treatment is to help with the elimination of the calculus, to prevent a recurrence, and to cure infection. Surgical treatment consists in removing any calculus that may be too large to be eliminated naturally, in correcting any anomalies that may cause stagnation and secondary stone formation, and in removing seriously diseased or destroyed kidneys. Therefore, after an operation for stones the patient should be put on a course of medical treatment. This postoperative medical management should include maintenance of a large fluid intake, eradication of infection in the urinary tract, elimination of foci of infection, correction of metabolic diseases, increased amounts of Vitamin A, parathyroid studies and exploration if indicated, dietary management, and study of the pH of the urine. For calculi composed of phosphates and car-

bonates, the high Vitamin A acid ash diet is needed. For uric acid, cystine and xanthine calculi, the high Vitamin A alkaline ash diet is prescribed.

The solvents used most in the dissolution of calculi are the Suby's<sup>7, 8</sup> solutions M or G. These are solutions of sodium carbonate, citric acid, and magnesium oxide. A great deal of work has been done on stone solvents and, although some isolated dramatic results have occurred, the use of solvents to effect a complete removal of the stone generally has been disappointing. Usually a kidney irrigated with a stone solvent will stop functioning, and it is important that one normal kidney is present when irrigations are being carried out. Almost all patients complain of some pain in the kidney during irrigation, and infection becomes more pronounced. Our experience with the stone solvents has been that of unsatisfactory results.

Of the commoner types of renal calculi, the phosphatic variety remains one of the most difficult to manage. A new useful treatment which has proved effective consists of the use of aluminum hydroxide gels<sup>9</sup> to bring about alterations in the chemical composition of the urine so that it will be unfavorable for the precipitation of the phosphate ion. The rationale for this regimen resides in the formation of insoluble aluminum phosphate salts in the intestinal tract and the corresponding reduction in the amount of phosphorus available for absorption. This diversion of phosphate excretion via the intestinal route results in a proportional diminution in the amount excreted in the urine.

#### SURGICAL TREATMENT OF RENAL CALCULI

Nearly every stone that is too large to be eliminated naturally ought to be removed surgically. Surgical removal can be urgent in conditions such as anuria, acute infection, renal hemorrhage, or disabling renal colic. Surgical procedures are elective if there are few symptoms and very little disability or kidney destruction. However, postponed kidney surgery can produce more kidney destruction. Any calculus that causes infection and obstruction definitely should be removed. The question often arises whether a silent calculus, which is practically symptomless, should be removed surgically. This calculus should be observed carefully by x-ray plain film, and the symptoms it produces should be studied. Occasionally a larger stone is removed with less kidney damage than a small stone which can move from calyx to calyx and be difficult to locate during operation. There is considerable discussion as to whether or not a staghorn calculus, particularly a bilateral staghorn calculus, should be subjected to surgery. If there is little kidney destruction and good kidney function with not much infection, we prefer to adopt the policy of watchful waiting.

## PYELOTOMY

Operation for the solitary calculus in the renal pelvis is probably the simplest procedure of all, ex-

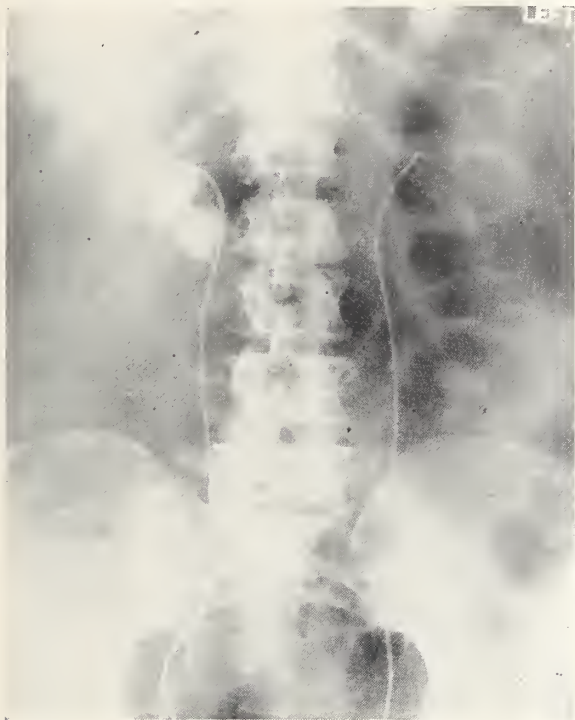


Figure 1. A plain film of abdomen showing two large stones in region of right kidney. Ureteral catheters to each kidney are seen.



Figure 2. Bilateral retrograde pyelograms showing hydronephrosis and extrarenal pelvic dilatation right. Two stones are seen in the pelvis on right.

cept where there is a small intrarenal pelvis. If this is present it may be necessary to do a nephrotomy. However, stones in the pelvis usually may be removed through a posterior pyelotomy incision as shown in Figures 1, 2, and 3. The surgeon has to be careful not to break a stone and leave a fragment to become a nidus for a recurrence. If the pelvis is of a fair size and extrarenal in type, one can make a sufficiently large incision so as to palpate the pelvis and calyces. Care must be taken not to leave a smaller stone not visualized in the x-ray films. After extraction of the stone, the kidney pelvis should be lavaged with a syringe (such as a Gibson type) so that small blood clots, debris, or stone fragments can be washed or suctioned out.

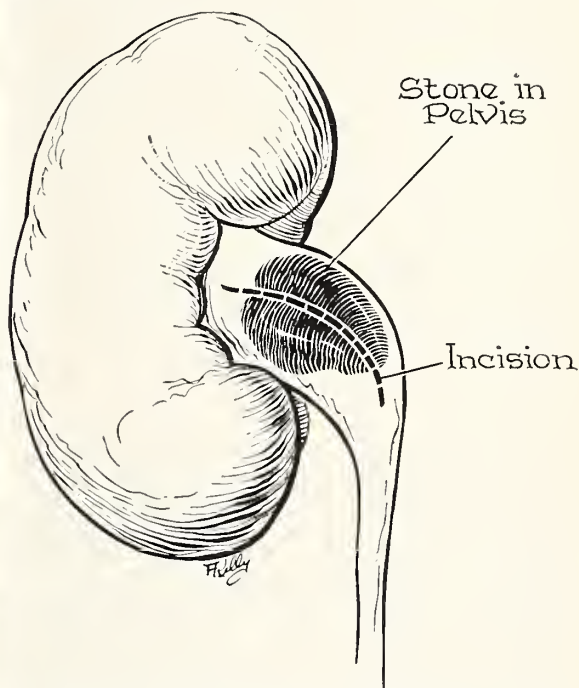


Figure 3. Drawing illustrating a posterior pyelotomy incision for removal of stone or stones from a kidney pelvis.

When doing a pyelotomy for a stone, we prefer not to free the entire kidney and displace it from its bed. Usually we expose only the lower pole and pelvis, thereby leaving the upper pole undisturbed in order to prevent additional trauma to it. If the entire kidney is freed, a nephropexy may be necessary to keep the kidney in good position. A search should be made for an aberrant renal vessel, stricture or nephroptosis, and, if found, it should be corrected. Closure of the pyelotomy is made generally with fine atraumatic catgut, and the incision is closed with drainage.

## NEPHROTOMY

When there is present a branching calculus, or a calculus imbedded in a calyx, a nephrotomy usually



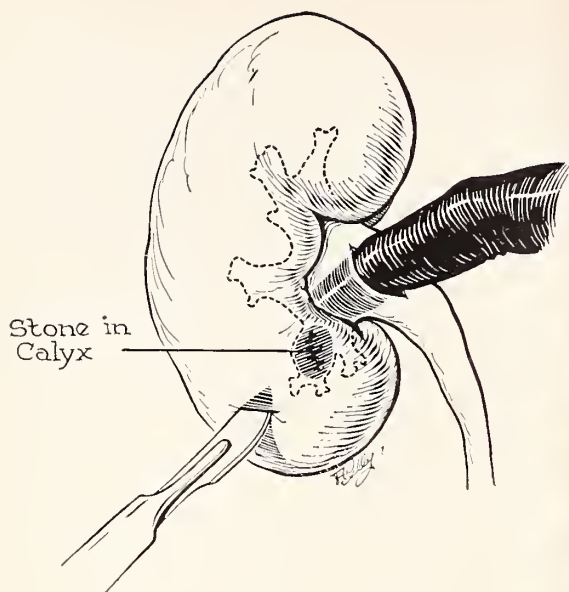


Figure 4. Drawing shows a calculus imbedded in a calyx and a nephrotomy being performed for the removal of the stone. A finger often can be inserted through a pyelotomy to locate the stone.

is performed as shown in Figure 4. During this procedure, the kidney generally is more completely freed than for a simple pyelotomy. This is true especially if the nephrotomy is extensive and one needs to control bleeding by pressure on the renal pedicle. Nephrotomies are most often performed on the convex



Figure 5. Plain film of the abdomen showing a ureteral catheter to each kidney in place, and a staghorn stone present in right kidney.

aspect of the kidney along the so-called avascular line of Brodel. An extensive nephrotomy is done when removing a unilateral staghorn stone as seen in Figures 5 and 6. Occasionally, there are several smaller



Figure 6. Bilateral retrograde pyelograms showing a staghorn stone in the right kidney pelvis and a normal left kidney.

calculi present in different calyces, and several nephrotomies may be necessary. Care must be taken to prevent breaking the stone during its removal.

When calculi are difficult to locate, the kidney may be needled and a stone is sometimes located. A roentgenogram should be taken just prior to surgery

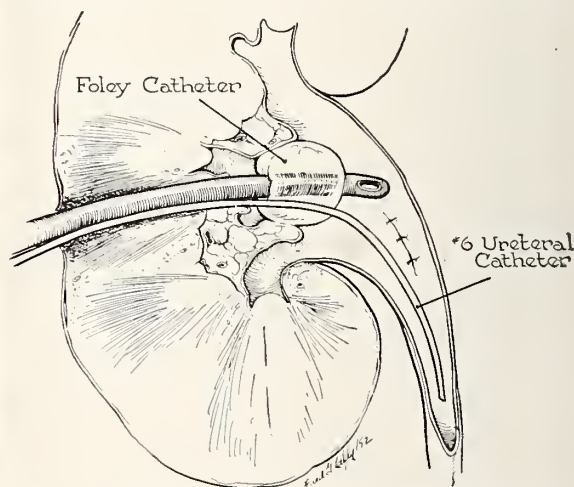


Figure 7. Drawing which shows a nephrostomy tube, and a ureteral catheter passed through the nephrostomy and down the ureter as a splint.

so as to be certain a calculus has not moved into the ureter. Facilities should be available for x-rays of the surgically exposed kidney. The calculi removed should be compared with those shown on the preoperative x-ray films to be certain no pieces have been overlooked.

The closure of nephrotomies is made with atraumatic mattress sutures which are approximated over pieces of fat or muscle to prevent tearing of the renal capsule. Ribbon gut, gelfoam and oxycel are used and preferred by some.

#### NEPHROSTOMY

After a nephrotomy, we usually place a number 6 ureteral catheter through the nephrotomy opening and down the ureter to act as a splint and not allow the ureter to kink or become adherent and obstructed against the kidney. Also, we always put in a catheter through the nephrotomy opening into the kidney pelvis such as a nephrostomy. Each of these catheters is brought outside the wound, and the wound closed around them (Figure 7). The ureteral catheter is coiled and taped to the patient under the dressing and allowed to drain into the dressing. The nephrostomy tube is cut off to leave two or three inches protruding beyond the wound and is also taped to the patient and allowed to drain into the dressing. If the catheters are connected to a bottle, they usually do not drain satisfactorily or are pulled out when the

patient turns over. Sometimes one can irrigate through the nephrostomy tubes with one of the stone solvents as shown in Figure 8.

#### NEPHRECTOMY

Conservative surgery is the rule in treatment of any renal disease. However, a nephrectomy is required when only one kidney is so extensively and irreparably damaged that it is useless as a functioning organ (Figure 9). The remaining kidney must have



Figure 9. Photograph showing a destroyed kidney and many stones present.

good function. Often one cannot make the final decision for nephrectomy until after surgical exposure and exploration.

#### HEMINEPHRECTOMY

Heminephrectomy or partial nephrectomy is indicated when a stone, accompanying infection, and destruction of kidney tissue are confined to one pole of the kidney. This disease process is found most often in a dependent calyx. The kidney substances are approximated with mattress sutures over pieces of fat or muscle tissue. We prefer the use of the latter.

#### MANAGEMENT OF BILATERAL RENAL STONES

Bilateral stones always present a serious problem because of the accompanying decreased function in each kidney. Conservative surgery is important under these circumstances. Operation on both sides at one time is seldom advisable except when rapid bilateral nephrostomy is necessary. This is needed when large stones are present with infection or when stones are obstructing both uretero-pelvic areas. It is now generally agreed that the patient with large bilateral calculi filling the renal pelvis on both sides is best left alone; he will live longer without operation than with operative interference. However, patients with less extensive bilateral renal calculi may be benefited



Figure 8. Film showing a nephrostomy catheter in a kidney pelvis which contains sand and stones. Nephrostomy tube has been injected with non-opaque dye after being irrigated with a stone solvent.



by surgical removal of the stones. There is a high incidence of recurrence in these patients.

Generally speaking, when an operation on both kidneys is indicated, it is preferable to remove the stones from the kidney showing the better function and least damage first. When the patient has recovered from this procedure, the other kidney is operated upon. Should exposure of the poorer kidney reveal conditions requiring a nephrectomy, the surgeon may remove it in the comforting knowledge that the other kidney is functioning well and has been repaired. Nephrectomy should be done only under exceptional circumstances, as when one kidney is functionless and absorption from it will affect the other kidney.

#### REMOVAL OF STONES FROM A SOLITARY KIDNEY

Stones in a solitary kidney can be hazardous. Operation should be done with special care and with little trauma to prevent kidney injury. The kidney should be mobilized as little as possible.

#### STONES IN PREGNANCY

When stones are discovered in pregnancy, conservatism is the rule (Figure 10). If the stone is

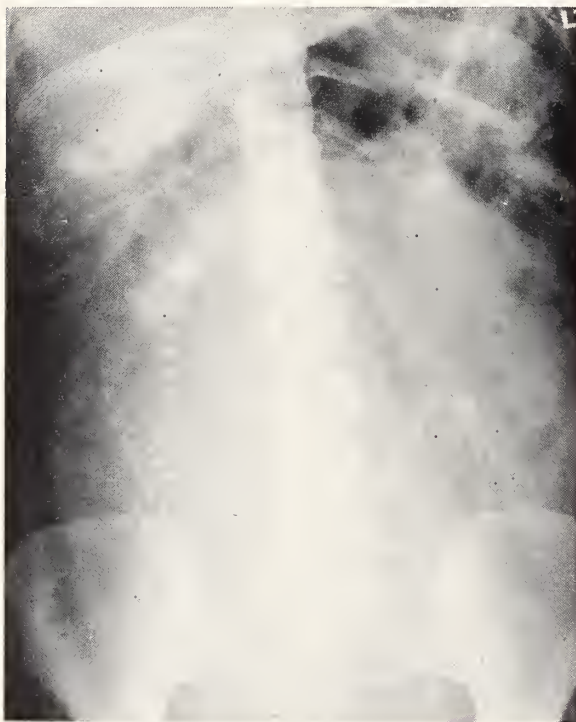


Figure 10. Plain film of abdomen showing nearly a full term fetus and stones in region of right kidney.

large, it usually can be observed and removed at four to six months postpartum or when the requirements of lactation are not necessary (Figures 11 and 12). If the stone is small and causing obstruction, a catheter for drainage should be tried before operation is decided upon.

#### CONCLUSION

The management of a patient with renal lithiasis is a complex problem, and surgery is but one phase.

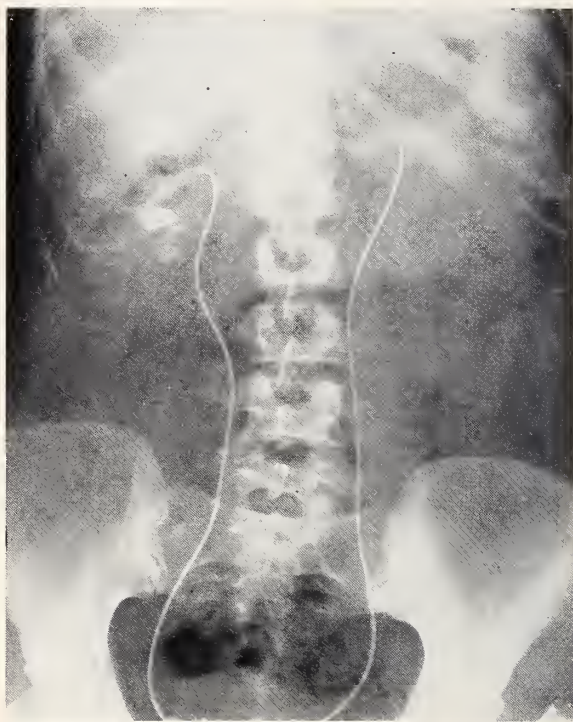


Figure 11. Postpartum x-ray film of same patient as in Figure 10. Catheters are seen in place; stones in right kidney area.



Figure 12. Bilateral retrograde pyelogram of postpartum patient (Figures 10 and 11). Right pyelogram shows stones and pyelonephritis. Normal left pyelogram.

The etiological factors should be given careful attention, and all measures to prevent recurrent lithiasis should be taken. We should endeavor to eradicate infection and eliminate the factor of stasis. Focal infections should be cleared up, and a proper dietary regimen instituted. Patients should be x-rayed every three to six months over a period of several years, and they should have excretory urograms taken occasionally.

It would seem to be the opinion from recent publications that marked progress has been made in the management of patients with renal calculi; however, the sober fact remains that calculus disease is still a major problem in urology.

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## A Procedure for Repeated Infant Transfusion

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In a small general hospital where interns and residents are not available, the time consumption incident to infant and small-child blood transfusion, obtaining blood specimens for laboratory procedures, and intravenous fluid administration is often a very demanding item upon the time and patience of a busy doctor. Also, for the doctor who is inexperienced in pediatric procedures and with a shortage of nursing personnel, an infant transfusion may become a procedure to be dreaded. It is to be expected that as a result of these factors the recovery of a very ill child may be retarded, due to the hope on the part of the doctor that he can "get by" without transfusions. The use of hyaluronidase has of course helped solve the fluid administration problem by enabling the rapid administration of fluids subcutaneously.

In our hands the installation of an indwelling catheter into the saphenous vein has been a safe and effective procedure for facilitating blood transfusion. This has been used for ordinary transfusions, for repeated transfusions, and also for exchange transfusions for erythroblastotic infants. In the latter cases it is especially advantageous where the possibility of re-exchange of blood and supplementary administration of blood is contemplated.

The procedure as outlined below has the advantage that the catheter remains in place as long as needed. (In one case it was still patent and usable when finally removed at the end of 25 days.) The

fact that the catheter is of relatively inert material and its end lies within the lumen of a large vessel without occluding it, where it is surrounded by actively flowing blood, undoubtedly decreases the likelihood of thrombosis of the vein and occlusion of the catheter. Blood and fluid may be administered through it, and blood samples for laboratory tests may be withdrawn from it, although at times the latter is difficult due to impingement of the wall of the vein upon the end of the catheter.

At this writing it has been used in seven cases in the Bethel Deaconess Hospital with no complication and with much relief from technical difficulties on the part of the attending physician and the nursing personnel. Three of these cases were erythroblastotic infants where exchange transfusion was done with survival of the infants. One infant received two 500 cc. exchanges.

The procedure as performed by the surgeon is as follows: The infant is strapped to a circumcision board and is quieted by a nipple dipped in simple elixir. The femoral region of one thigh is washed with surgical soap and water and swabbed with tincture of zephiran solution. The patient is draped with sterile towels. The femoral artery is located by palpation inferior to the inguinal ligament. Just medial to this, and extending below the inguinal fold, a linear area 2 cm. in length is infiltrated with one half per cent procaine with 2 minims epinephrine per ounce.

An incision is made and the adipose tissue and superficial fascia are divided, exposing the long

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saphenous vein. The vein is freed to the saphenofemoral bulb, and any tributaries which interfere with its freeing are clamped and ligated with 4-0 chromic catgut. The vein is then elevated by a piece of 4-0 chromic catgut slipped around it. This ligature is tied approximately 1 cm. from the saphenofemoral junction, and the vein is clamped proximal to this. The vein is then severed between the clamp and tie and, by gently rotating the clamp so as to put some stretch on the vein, a small transverse incision through one-half the wall is made by a knife. The incision should be approximately 5 to 8 mm. from the saphenofemoral junction, depending upon the size of the vein. A number 16 gauge plastic tubing 12 inches long with tip bevelled is inserted into the saphenous vein and advanced up the femoral and iliac veins for a distance of 6 cm. into the lower vena cava. The tube is tied in place by two sutures of 4-0 chromic catgut, the distal one being looped around the tube twice and then tied for a second time. A number 18 gauge needle with a plug is inserted into the tube at its end to prevent the escape of blood, after the catheter has been irrigated with normal saline to test its patency. The wound is irrigated with normal saline solution.

The fascia is closed with interrupted sutures of 4-0 chromic catgut. The skin edges then are approximated by interrupted vertical mattress sutures

of the same material, except that the one at the lower end of the wound where the tube is brought out is of 5-0 cotton and is also looped around the tube twice and tied a second time to anchor the loop securely to the skin. Thus there is a double precaution that the tube will not be pulled out until the desired time. A dressing using collodion only may be practical, or one using waterproof adhesive does very well. The tube is now ready for use.

If only a transfusion is desired, the infant is returned to his room and is given the desired amount of whole blood by the usual drip method. After use, the catheter is filled with normal saline and the plug inserted into the hub of the needle. The precaution must be taken that blood does not run too fast as it might through an 18 gauge needle.

If an exchange transfusion is desired, it is carried out by the following procedure: A three-way valve is attached to the needle lying in the catheter, the side arm being attached to the source of blood, and a 20 cc. syringe is attached to the direct arm of the three-way. Higher up in the tubing, coming from the blood flask, a second three-way valve is attached with a 20 cc. syringe on the side arm. Blood is then drawn into the upper syringe in 10 cc. quantities and injected into the infant through the lower three-way and into the catheter. After each 10 cc. of blood is injected, a like amount is withdrawn into the lower syringe and discarded into a splash basin. This con-

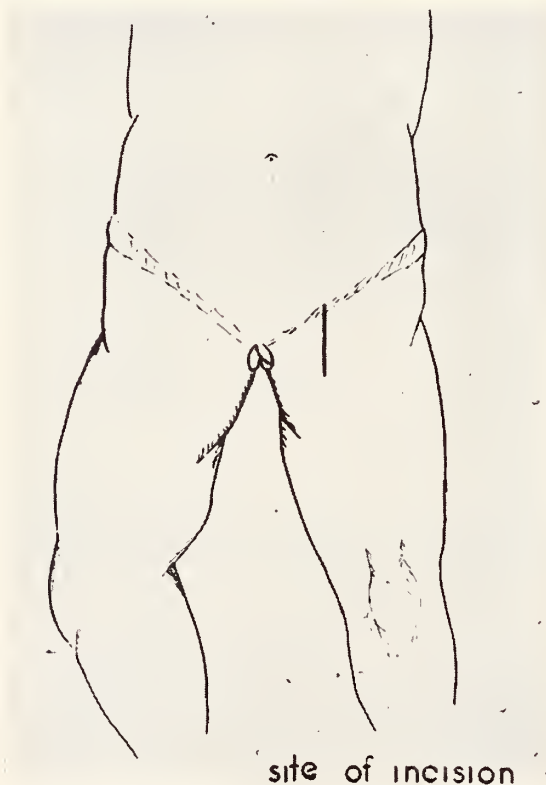


Figure 1. Site of incision.

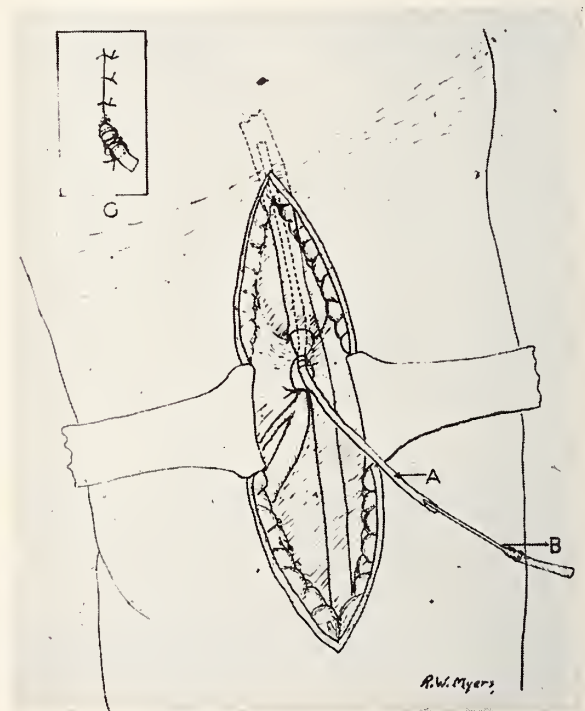


Figure 2. A, plastic tube. B, number 18 gauge needle attached to transfusion set or plugged when not in use; C, insert, skin closure showing method of stabilizing tubing.

tinues with alternate injection and withdrawal in 10 cc. amounts until the desired exchange is accomplished (usually 500 cc.). After each 100 cc. of blood is injected, 1 cc. to 2 cc. of calcium gluconate is injected directly into the three-way attached to the catheter. A separate syringe containing the calcium gluconate is kept at hand for this purpose. This is to replace the calcium removed by the anticoagulant employed in the blood used for transfusion. Without it, hypocalcemic tetany may result. The withdrawing syringe is prone to become stiff and sticky unless rinsed frequently in normal saline. A splash basin containing sterile normal saline should be immediately available for this purpose. After completion of the exchange, the indwelling catheter is irrigated and left filled with normal saline and the needle plug inserted. (See diagram for details.)

If subsequent re-exchange is necessary, it is carried out in exactly the same manner. Additional amounts of supplementary Type O, Rh negative blood may be administered through the indwelling catheter as needed. It is suggested that if the catheter is not being used for fluid administration daily, it will aid in maintaining its patency to irrigate it at least twice daily with normal saline. Blood specimens for laboratory tests may be obtained through the indwelling catheter, after first aspirating the normal saline which lies within its lumen.

It has been our practice to keep a sterile infant exchange transfusion set-up available at all times with tubing, three-way valves, syringes, etc., all ready for use. The tubing connecting the three-ways and extending to the blood supply is tied securely to the three-ways, so that the usual confusion of assembly of a complicated apparatus is avoided. It is then only a matter of attaching syringes, filling the tubing with blood, attaching to the hub of the needle lying in the catheter, and starting the procedure.

When the tubing is no longer required, it may be removed by merely removing the skin sutures holding the catheter and exerting a steady pull on the catheter. It slips out of place easily. The other sutures, if they are still in, are removed at this time. Usually they have been removed on approximately

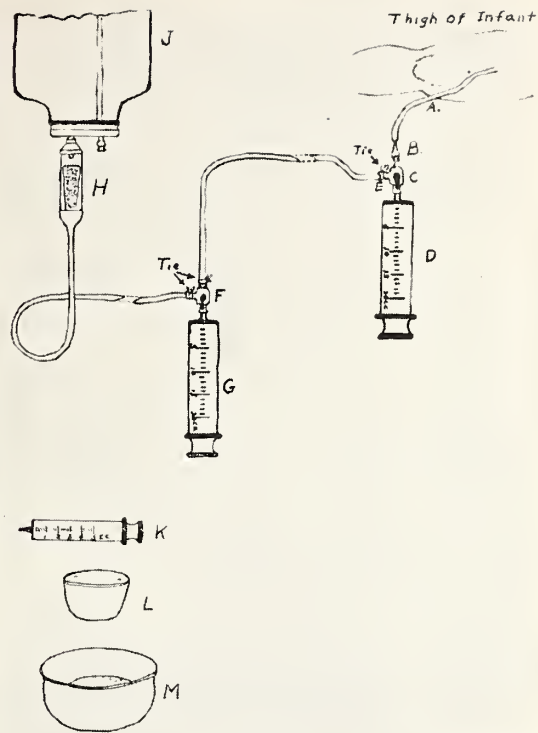


Figure 3. Transfusion apparatus. A, catheter in saphenous vein; B, number 18 gauge needle in catheter; C, three-way valve; D, 20 cc. blood withdrawing syringe; E, side arm attached to tubing from blood source; F, three-way valve; G, 20 cc. syringe for blood injection; H, filter and drip attached to blood flask; J, blood flask; K, 5 cc. syringe containing calcium gluconate; L, sterile saline basin for rinsing syringe; M, basin for aspirated blood discard.

the sixth or seventh day after the insertion of the tube. A pressure dressing is applied to the femoral region and held in place with waterproof tape. All wounds have healed without complications.

It is our belief that the initial 20 or 30 minutes incident to the installation of an indwelling catheter saves much time for the doctor in the long run and makes him less hesitant to go to the "bother" of transfusing an infant repeatedly.

Note: The plastic tubing used is BD plastic tubing No. 444T, 12 inches, which is a special vinyl compound prepared by Becton, Dickinson and Company.

"To carry the healing art to the highest perfection of which it is susceptible, more skill, more learning, more industry, and indeed, more integrity, are requisite in the members of the medical faculty, than in those of any other profession.

". . . The mercenary practitioner, who is destitute of zeal in the cause of humanity, who has no love for his profession, who feels no ardour in the pursuit of studies and observations, which leads to its improvement, but pursues an indolent routine, and for the emolument only, makes a trade of his practice, must have first extinguished every principle of humanity, or honour, and of moral responsibility."

—Thomas Miner (1823)



# Pituitrin Induced Shock—A Case Report

M. Dale Atwood, M.D.,\* and Hansel Benvenuti, M.D.\*

Wichita, Kansas

There is little question that a form of shock may be produced, in particularly sensitive or sensitized individuals, by the injection of a solution of posterior pituitary extract.<sup>1</sup> The role of parenterally administered pituitary preparations in producing collapse or sudden death has been well established, and numerous such instances have been recorded.<sup>2</sup>

According to pharmacologists and anesthesiologists, so-called "pituitrin shock" is a phenomenon produced by the pressor substances present in the extract used. This pressor action is specific in its action on the coronary arteries, producing vasoconstriction and subsequently shock. Pendleton, Ball and Rhode subscribe to this theory, as do Adelman and Lennon, stating the specific action of the pressor substances on the coronary arteries results in "myocardial anoxia, cardiac dilatation, and decreased cardiac output." Simon and Ryder, on the other hand, hold that the entire process of reaction to posterior pituitary extract is a foreign protein reaction due to the presence of the protein in the extract.<sup>1</sup>

Krettek and Russum reported a fatal case of "pituitrin shock" occurring during the medical induction of labor with the purified oxytocic fraction of the posterior pituitary gland. They point out that this case supports the contention that untoward cardiac effects can be avoided only with non-biologic oxytocics.<sup>2</sup>

## CASE REPORT

The patient was a 47-year-old housewife, para 18, gravida 19, who was admitted at term in active labor. All of the pregnancies were full term, normal deliveries with the exception of one eight-months baby. Fifteen of the children were still living. She had had no serious illnesses or operations. She had had one previous delivery at this hospital and had been given pituitary extract following delivery with no complications. The family history was not significant other than that the mother died of cancer and the oldest child has diabetes.

The patient had had three recent admissions for false labor, and no significant abnormalities were noted, other than a blood pressure of 150/90 on one admission. She was given no medication prior to delivery, and during delivery nitrous oxide was used for analgesia. The first stage was estimated at 3 hours and 15 minutes; second stage, 7 minutes; and third stage, 7 minutes. She delivered a 7 pound 11½

ounce female in good condition at 1:22 p.m. After delivery of the placenta, she was given 1 cc. of ergotrate and 1 cc. of obstetrical pituitrin intramuscularly. She was returned to her room and given morphine gr. 1/6 at 1:40 p.m.

Shortly after returning to her room, she was observed to be a beefy red color. She was somewhat cyanotic and complained of substernal oppression. No sweating was present. The pulse rate was about 60 beats per minute and regular. No blood pressure was obtainable, and she appeared to be slowly losing consciousness.

Oxygen was started immediately, and she was placed on shock blocks. She was given 50 mg. of ephedrine intravenously, and the blood pressure improved. One ampule of coramine was also given intravenously, and a little later 6 minims of epinephrine was given. The epinephrine caused considerable improvement as noted by the diminution of the red flush. At 2:00 p.m. still no blood pressure was obtainable, but by 2:25 p.m. the pressure was 100/80. In addition to the above therapy, the patient was also given ACTH, 25 mgm I.M., and one pint of blood.

The next day, when questioned, she reported that before leaving the delivery room she noticed itching of her upper extremities and chest. On the way to her room she noticed a lump in her throat which seemed to cut off her breath. She felt weak even before she was taken off the delivery table, and this continued to get worse.

Her hands started swelling with the reaction and were still moderately swollen on the first postpartum day. By the second postpartum day, most of the swelling was gone from the hands. The patient had an uneventful postpartum period with the exception of the reaction to the pituitrin, and she was dismissed on the sixth postpartum day.

## SUMMARY

We have reported a case of shock following the use of obstetrical pituitrin after delivery. The patient responded well to therapy. We feel that this case strengthens the argument against the use of ordinary solutions of posterior pituitary extracts.

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1. Kanter, A. E., and Klawans, A. H.: Shock from posterior pituitary extract, *American Journal of Obstetrics and Gynecology* 56:366-369 (August) 1948.
2. Krettek, John E., and Russum, Benjamin C.: Sudden death from "pituitrin" shock, *Journal of Iowa State Medical Society* 42:255-256 (June) 1952.

\* Sedgwick County Hospital, Wichita, Kansas.

## BLUE SHIELD

### Optional New Benefits

The principal objective of Blue Cross-Blue Shield has been to make available a hospital-medical-surgical plan designed to help most when the serious or unexpected occurs. To this end the regular contracts already provide, for example, as much as 90 days per admission in the hospital, no limit on specialized hospital services listed in the agreement such as drugs, oxygen, etc., and payment for surgical services at about three-fourths of the prevailing charges for such services on a state-wide basis. To the low income member these surgical payments represent full coverage for services given by a participating physician in the plan.

Even with these provisions, which are more and more helpful as the severity of the cases increases, certain necessary restrictions still exist which cause the patient to assume a portion of the cost in particularly long, difficult cases.

To provide greatly extended protection in these areas, an optional rider is being offered to all members of Blue Cross and Blue Shield. Nine diseases are included in this rider. They are: poliomyelitis, leukemia, diphtheria, scarlet fever, tetanus (treatment only), cerebrospinal meningitis (meningococcus), encephalitis lethargica (sleeping sickness), tularemia, and rabies (phylaxis).

Poliomyelitis is probably the most dangerous and expensive of the nine diseases covered, and it is believed that experience gained in this area will assist in eventually finding the best approach to the entire field of catastrophic illness.

The extended benefit riders are intended to give full hospital, medical and surgical services to Blue Cross-Blue Shield members who elect to take the riders and who require treatment for any of the above diseases. The riders further provide any services available from hospitals or doctors of medicine which are appropriate to the treatment of said diseases. This extra coverage is over and above and in addition to the services available in the present membership agreement.

Since there will be no established fee schedule in the rider, it is intended that Blue Shield should pay the full charges of physicians in excess of the allowances in the regular Blue Shield agreement. These charges would be those ordinarily made to private patients in the community for the services performed.

Extra benefits will be provided up to a limit of \$5,000 for each plan or a total of \$10,000 for both plans. The cost of the riders will be 30 cents for a

single membership and 60 cents for a family membership, per month.

Any member of both Blue Cross and Blue Shield will be eligible to add the extended benefits rider during the opening dates of June 1 for direct pay members and July 1 for members of employee groups. Group members may add the service at the annual re-opening date of their group and, if the response is adequate, the rider may be offered to direct pay members at some future time during the year. If a direct pay member now has only Blue Cross, he will be permitted to join Blue Shield at this same special enrollment opportunity.

Only two restrictions will be applied: (1) The illness must be diagnosed as one of the named diseases and must have been contracted after the first 15 days immediately following the effective date of the riders; (2) claim for services must be made within 12 months from the date the disease is contracted.

Full information will be sent to all participating physicians so that they will be prepared to answer inquiries about the riders. The trustees and staff look forward to the usual co-operation and assistance from all members of the Kansas Medical Society.

## THE KANSAS PRESS LOOKS AT MEDICINE

If the federal government really wants to improve the health of the people, here is a suggestion: instead of adding taxes for some fancy socialized medicine scheme, take taxes away from present voluntary health insurance plans and medical expenses.

In other words, permit a person to deduct as an "expense" for income tax purposes his total cost of medical and dental expenses and premiums on hospital and surgical insurance plans.

The present provision is meaningless to 99 out of 100 taxpayers. It permits deductions only of medical expenses in excess of 5 per cent of annual income, and then only if all deductions are itemized.

If, on the other hand, such expenses could be deducted from scratch, the tax incentive to join prepaid health plans and "see your doctor when you ought to" would be tremendous. It would cut from a fifth to a third off medical and insurance costs for all who pay any income tax whatever—and that's almost everybody these days.

It would cost the government some revenue, but so would any other income tax cut. They say that cuts are in prospect. How about this one for a starter?—*Iola Register, April 6, 1953.*



## PRESIDENT'S PAGE

DEAR DOCTOR:

This is the first issue of the JOURNAL going to press after the very fine annual session in Wichita. The Sedgwick County Medical Society spared no time or pains as hosts to give us an outstanding meeting. I am sorry that every member of our Society and every member of the Auxiliary could not have been present.

Your House of Delegates authorized a further investigation of the field of indigent care with the Board of Social Welfare to determine the type of contract that might be negotiated. If they will contract only with our Society, including both drugs and hospitalization, then it will be necessary for your officers to determine what can be negotiated with the hospital and pharmaceutical associations.

Remember, nothing in these preliminary investigations is binding as far as the Society is concerned. Your officers do not have the authority to make such a contract. But when all possible information is obtained, we will present it to you, both individually and whenever possible collectively, for your consideration and finally your sanction or disapproval. This will be accomplished by a special called meeting of the House of Delegates.

It is not our desire to attempt in any way to influence your line of thought or your ultimate decision. However, we would like to stimulate in each of you certain trends of thinking. It is up to you to bring those trends to their final conclusion.

Remember, please, it is our obligation to administer to the medical needs of each and every person, regardless of his ability to pay, if and providing they request such service. The fact that an individual may be unfortunate enough to have to request our services through the indigent set-up does not negate our responsibility. The indigent patient of today may be a private patient tomorrow, and, if a satisfied patient today, may be not only a fine patient tomorrow but, what is still more important, he or she may pay for your services over and over again through good will and personal reference of other patients.

Let us not shut our eyes to our responsibility.

A handwritten signature in cursive script, reading "Lucien B. Fyfe". The signature is written in dark ink and is positioned at the bottom of the page, below the main body of text.

## EDITORIAL COMMENT

### LIVING STANDARDS

There is probably no member of the Kansas Medical Society who would voluntarily exchange his life in the United States, with all of its difficulties, for that of any other nation on earth. Each individual could list, if required to do so, an impressive series of advantages found here that are not available elsewhere. These lists would vary according to individual tastes and according to individual values, but the end result is not in question.

One difference that might become of interest lies in the field of economy. A recently published table provides an interesting comparison of the cost of common items in five nations. Balancing foreign exchange values would be a difficult task, so this report simplifies the problem by merely estimating the time of labor required in each country before enough is earned to purchase certain goods. It becomes a graphic account of living standards and adds one more, among the many reasons Americans have for being proud of their country.

Included in this report are the United States, Russia, England, France, and Italy. Occupations considered are the auto mechanic, telephone operator, store clerk, bus driver, and carpenter. Items for purchase include butter, bread, bacon, coffee, movie ticket, monthly electric bill, refrigerator, radio, nylon hose, man's suit, and a light automobile. Foreign data was obtained from correspondents stationed in the country involved. They did not attempt to compare currency but studied only the relation of wages and prices within each nation. Therefore, these figures present the time of work required to purchase certain commodities.

For example, the United States auto mechanic may buy a pound of butter after 22 minutes work. In Russia he works 7 hours 15 minutes for a pound of butter. The auto mechanic in England will work 48 minutes, in France 1 hour 48 minutes, and in Italy 3 hours 20 minutes for the same thing.

The telephone operator works 30 minutes in the United States—14 hours 30 minutes in Russia, 48 minutes in England, 2 hours 36 minutes in France, and 3 hours 36 minutes in Italy for a pound of butter. The carpenter buys a pound of butter in the United States after 15 minutes work. He works 10 hours 53 minutes for his pound of butter in Russia, 48 minutes in England, 2 hours 30 minutes in France, and 3 hours 20 minutes for the same commodity in Italy.

Under the heading for monthly electric bills Rus-

sia lists that there are none for workers, and under refrigerators there are also none for workers. In general, England is nearest the United States. Among the items selected it is never ahead of this country and rarely equal. Russia is usually farthest away and Italy next. The principal exception is, interestingly, the item of light automobiles. Here Russia is next to the United States under the earnings of the auto mechanic and the carpenter but a little behind England for the other occupations.

Even for the purchase of cars Russia is far behind the United States. The American auto mechanic may buy his car with 6 months labor. The Russian needs 15 months work while in England he must work 2 years. The carpenter fares a little better in this country (16 weeks 4 days) but worse in Russia (22 months 2 weeks) and even at that is still slightly better off than the English carpenter who works 2 years. The telephone operator and the store clerk work longer in all countries, but here English workers come ahead of the Russian. In this category Italy is far behind.

A very wide span exists in the relative cost of coffee and of bacon. The telephone operator in America earns a pound of coffee with 32 minutes work. In Russia it is 35 hours 12 minutes. Again, England is closest, but this telephone operator works 1 hour 36 minutes. In France she works 2 hours 18 minutes and in Italy 6 hours 10 minutes for a pound of coffee.

Bacon has a similar range. The bus driver earns a pound of bacon in the United States after 18 minutes, while in Russia he works 20 hours 48 minutes, in England 1 hour 3 minutes, in France 2 hours 12 minutes, and in Italy 2 hours 6 minutes. Nylon hose cost the American telephone operator 40 minutes, but her Russian counterpart works 27 hours 30 minutes for each pair. In England it is 2 hours, 48 minutes, 6 hours 6 minutes in France, and 6 hours 36 minutes in Italy.

A telephone operator in this country can see a movie with her wages from 30 minutes of work, while operators in England and France work twice as long to pay for that form of recreation. Girls from the switchboards of Russia and Italy must work 2 hours to buy a movie ticket.

The operator in this country works 40 minutes for a pair of nylon hose. At the other extreme, the Russian telephone operator must work 27 hours 30 minutes for a similar pair of hose.

The above are just samples, but the results are similar in all categories. So even if further reasons for selecting the American way of life are not needed, the information here printed gives one additional proof to the existing mountain of evidence that the American way is the finest standard of living in the world.





MRS. LEO J. SCHAEFER, SALINA, KANSAS

*President, Woman's Auxiliary to the American Medical Association*

1953-1954

## The Kansas Medical Society Expresses Its Pride in Mrs. Leo J. Schaefer, Salina, Kansas

*President of the Woman's Auxiliary to the  
American Medical Association*

The medical profession in this state can take pride throughout the coming year in the position of a member of the Woman's Auxiliary to the Kansas Medical Society. At a meeting held in New York City early this month, Mrs. Leo J. Schaefer, Salina, took office as president of the Woman's Auxiliary to the American Medical Association. She is the first Kansan to have won a national office in the Auxiliary.

The position carries with it numerous responsibilities as well as honor. Mrs. Schaefer will be charged with the duty of carrying on present projects such as nurse recruitment, promotion of *Today's Health*, the AMA publication for lay distribution, and public relations, and in addition will be required to inaugurate new activities.

Mrs. Schaefer is an efficient, capable worker and through the years has acquired an intimate knowledge of Auxiliary projects. She began this work as a member of the Auxiliary in Saline County, which she served as president in 1940-1941. She was also interested in the state organization and at various times was councilor, revisions chairman, and public relations chairman. She reached the highest office in the Kansas Auxiliary in 1944-1945 when she served as president.

Her scope was widened to include the national organization when she started her first term as a member of the board of directors. That was followed by one year as program chairman, two years as second vice-president, and two years as first vice-president. During the past year she has served as president-elect, in which position she has been an active aid to the president.

Mrs. Schaefer's first interest is her family. This includes Dr. Schaefer, who is a surgeon, one daughter, and four sons. It might be surmised that Auxiliary work receives second priority. Then follow other interests, church work, the Parent-Teacher Association, the General Federation of Women's Clubs, and civic, music, and other community activities. She has also directed the Red Cross nutrition program in Saline County for many years, a position for which she was well trained since her degree was in home economics and she formerly was employed as a dietitian.

The congratulations and best wishes of all members of the Kansas Medical Society go with Mrs. Schaefer as she assumes the highest Auxiliary office in the nation.



# 94th Annual Session, Kansas Medical Society

The 94th annual session of the Kansas Medical Society was held in Wichita, Kansas, May 3 through May 7, 1953. The host society was celebrating its 50th anniversary in connection with the meeting and, through its Arrangements Committee under the chairmanship of Dr. E. S. Brinton, had made elaborate arrangements for this annual session. The weather was generally favorable, and, according to the opinion of those who were present, the session was outstanding in all respects.

The total attendance for the golf tournament and the skeet shoot was slightly reduced from the figure of several years ago but was considered quite good in view of the conflict between these athletic events and the annual meeting of the Kansas Academy of General Practice. This latter meeting was well attended and favorably reported by those who were present.

Also in conjunction with the annual session were successful meetings of the Woman's Auxiliary to the Kansas Medical Society and the Kansas Medical Assistants' Society. As in the past, many other groups met for brief periods in connection with this meeting, and all reported good attendance and spirited discussions. To mention only a few, there were meetings of the Kansas Blue Shield Board of Directors, the Advisory Committee to the Vocational Rehabilitation Service, and other specialty groups in medicine such as obstetrics, pathology, pediatrics, etc.

The scientific program began Tuesday morning, May 5, and continued until noon on Thursday. All announced speakers appeared on schedule, and many favorable comments were received regarding the exceptionally high caliber of the scientific program at this session. It was noticed that these lectures were unusually well attended.

There was an average number of scientific exhibits, unusual this year because of their quality and because the majority were produced by members of the Kansas Medical Society. These exhibits were judged by a committee of guest speakers, and the following awards were made: first prize, "Radioactive Isotopes," Doctors Charles M. White, Thomas J. Luellen, James R. Stark, Robert P. Norris, and Philip W. Russell, Wichita; second prize, "The Influence of Chemotherapy and Antibiotics on Surgical Management of Hydronephrosis," Dr. Harold F. O'Donnell and Dr. William H. Browning, Wichita; third prize, "The Treatment of Fractures of the Shaft of the Femur in Young Children," Doctors Charles R. Rombold, Harry O. Anderson, Henry O.

Marsh, John F. Lance, Jr., William R. Miller, and Cline D. Hensley, Wichita.

The largest number of commercial exhibits ever to appear at an annual session of the Kansas Medical Society was presented this year. Seventy-three booths were constructed in a labyrinth at the Rose Room at the Forum, which number is at least six greater than the highest previous total. Throughout the session members stopped and visited with the exhibitors, and this portion of the meeting was favorably received, according to expressions obtained from representatives both of the membership and of the companies which exhibited. In addition to the companies reported in the program issue of the JOURNAL, the following firms were present: A. S. Aloe Company, Dictation Systems Company, Continental Casualty Company, Encyclopedia Americana, and U. S. Vitamin Corporation.

The highlight among entertainment features was the annual banquet held at the beautiful new ballroom of the Broadview Hotel. A total of 522 physicians and their wives were present to witness the oath of office administered to the president-elect, Dr. Lucien R. Pyle, and the presentation of the president's key to Dr. Warren F. Bernstorff upon the completion of his term. A special presentation was made to state Senator R. C. Woodward of El Dorado for outstanding services rendered the people of Kansas through his efforts to maintain high standards of health care. A thoroughly enjoyable entertainment period was offered by the Wichita Kiwanis Male Chorus, after which the remainder of the evening was spent in dancing.

## REGISTRATION

Registration for the meeting was good. Six hundred forty-eight members of the Kansas Medical Society attended this session. Three hundred twenty-seven guests, of whom 39 were non-member physicians, registered. There were 271 registered by the Woman's Auxiliary to the Kansas Medical Society and 310 by the Kansas Medical Assistants' Society, making a total registration for the 94th annual session of 1,556.

## FIRST SESSION, HOUSE OF DELEGATES

The House of Delegates met twice during the annual meeting and conducted an unusual amount of business. The first meeting was a dinner on Tuesday, May 5, at the Allis Hotel, at which time committee reports and reports of officers were heard. These have either been previously published or are

available at the Executive Office and will not be recorded again in this report. Considerable time was consumed in exploring topics such as malpractice insurance, indigent health care, the University of Kansas School of Medicine, a public relations program for the Society, and a review of health legislation. Each of these was presented by various committees as a supplementary report to those previously printed in the JOURNAL.

Officers generally gave oral reports which are published elsewhere in this issue. The principal exception was the report of the secretary, who advised that the Kansas Medical Society has a paid membership of 1,289. There were, at the time of the meeting, 246 delinquent members, 139 honorary members, 42 on leave of absence, and 51 in service. This makes a total membership of 1,767, a reduction of one during the past year.

Under the item of new business, many resolutions were introduced, and those which were favorably acted upon are recorded in the minutes of the second meeting of the House of Delegates.

#### SECOND SESSION, HOUSE OF DELEGATES

The House of Delegates held its second session at the Allis Hotel, Wichita, beginning with a luncheon at noon on Thursday, May 7. On this occasion resolutions previously introduced were acted upon. All had been studied by a special Reference Committee composed of Dr. Dale D. Vermillion, chairman; Dr. H. Penfield Jones, Dr. John L. Lattimore, and Dr. Lucien R. Pyle.

The first resolution to be considered was recommended for passage by the Reference Committee and was unanimously approved by the House of

Delegates. It provided "That the House of Delegates go on record commending the Blue Shield Relations Committee and the official bodies of the Blue Cross-Blue Shield for offering this progressive step in voluntary health insurance for the people of Kansas and that a copy of this action be sent to the director of Kansas Blue Cross-Blue Shield and to the chairman of the above named committee."

The Reference Committee recommended adoption of all proposed amendments to the By-Laws of the Kansas Medical Society. Each was considered individually, and all were approved by the House of Delegates. The amendments follow:

*Resolved*, That Chapter XI, Section 1a of the By-Laws on Pages 23 and 24 be amended by adding to the list of standing committees

"Past Presidents Advisory Committee, Sec. 35."

*Resolved*, That Chapter XI on Page 33 be amended by the addition of a new section, No. 35, to read as follows:

"35. The Past Presidents Advisory Committee shall be composed of *all living* Past Presidents. Meetings shall be held at a convenient time and place at the call of the Immediate Past President, and succeeding meetings as desired. The Chairman and Secretary are to be selected at the first meeting of each year.

"The purpose of the committee shall be mutual fellowship and means of free discussion of all pertinent matters affecting the ideals, aims, proficiency, and successful operation and work of the Kansas Medical Society. The advice and recommendations arising from these meetings and discussion, which have the benefit of experience in office, shall be communicated to the Council through the Immediate

#### SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

Claude D. Baker, M.D.  
4172 Menlo Drive  
Wichita, Kansas

William W. Benefiel, M.D.  
P. O. Box 105  
Medicine Lodge, Kansas

Ralph S. Crawshaw, M.D.  
2113 Potomac Drive  
Topeka, Kansas

Karl A. Erhlich, M.D.  
2261½ West Central  
El Dorado, Kansas

Donald R. Germann, M.D.  
4603 Melvin Street  
Kansas City, Kansas

Dan Wesley Hoebert, M.D.  
227 Poplar  
Halstead, Kansas

Erwin M. Janzen, M.D.  
120 Southwest 2nd Street  
Newton, Kansas

Maurice H. Jennison, M.D.  
4136 Adams  
Kansas City, Kansas

Glenn A. Lessenden, M.D.  
1309 Ohio Street  
Lawrence, Kansas

Charles W. Merten, M.D.  
630 Santa Fe  
Augusta, Kansas

S. B. Whittenberger, M.D.  
6029 Delmar  
Mission, Kansas



Past President who is their official representative upon that Council."

*Resolved*, That Chapter VI, Election of Officers, Section 1 on Page 13 shall be amended and become effective on and after its adoption by the House of Delegates, by striking from the last two lines the clause "a list of two or more candidates for each elective office." In lieu thereof the following shall be inserted:

"... a list of candidates for each elective office, consisting of one or more candidates for the offices of President-Elect, First Vice-President, Secretary, Treasurer, and Delegate-Elect to the American Medical Association, and TWO or MORE candidates for the offices of Second Vice-President and Alternate Delegate to the American Medical Association. Whenever possible or practical, the candidates for Treasurer should be named from residents of the city or vicinity of the location of the central office."

*Resolved*, That Chapter VIII, Section 13 of the By-Laws on Page 19 shall be amended by removing Barber County from the Eleventh District and placing it in the Sixth District.

*Resolved*, That Chapter XII, Section 5, be amended as follows: In Line 10 after the word "practice" a comma shall be inserted to be followed by the clause "and the greater proportion of his professional work be conducted within this state." The remainder of the section is to be retained.

*Resolved*, That Chapter XII, Section 9, be amended to read as follows:

"Section 9. A physician living on or near a county line WITHIN this state, and practicing in adjacent counties, may hold membership in the county of the major proportion of his professional work, or in the county most convenient for him to attend if permission is obtained from the component society in whose jurisdiction he resides and by election to the component society in which he desires membership."

*Resolved*, That Chapter XII, Section 10, be amended to read as follows:

"Section 10. On and after the passage of this amendment, no physician shall be admitted to new membership in this Society, or in any of its component societies, who is a member of a state or component medical society of another state unless he intends by his application to transfer membership and the major portion of his professional work to this state. Any physician residing in a county adjacent to another state or in a county of an adjoining state, licensed to practice in both states, and carrying on his professional work in both states, but the greater part of his professional work is carried on in this state, shall be eligible for membership in

The Kansas Medical Society. A full time teaching assignment at the University of Kansas School of Medicine or in any state supported school, college or institution shall be considered the major portion of his professional work, regardless of the proportion of financial remuneration received from professional work outside the state of Kansas. When there are unusual circumstances connected with the above limits of eligibility which cause his membership to be advisable in this state or the adjoining state, consent to membership must be obtained from the county or state society of his residence."

*Resolved*, That Chapter XI, Section 1 (a) be amended by changing the name of the "Committee on Public Health and Education" to the "Committee on Public Relations, Sec. 29."

*Resolved*, That Chapter XI, Section 29 be amended to read:

"The Committee on Public Relations shall consist of five or more members who shall, through the media of speakers' bureaus, newspapers, radio, and personal and group meetings, make material and information available to the public on all subjects for betterment of general health, and secure for the profession criticisms and valuable information for the improvement of relations of physicians individually and collectively with patients and the public generally. At least the chairman and one other member of this committee shall have served on the retiring committee."

*Resolved*, That Chapter XI, Section 1 be amended by the addition of the "Committee on Pathology, Sec. 36."

*Resolved*, That Chapter XI, Section 36 shall read:

"The Committee on Pathology shall be composed of five pathologists, appointed for a term of three years. Originally, one shall be appointed for one year, two for two years, and two for three years. All matters presented to the Society relating to the practice of pathology shall be referred to this committee for study and recommendation."

Two proposed amendments to the Constitution could not be acted upon by the House of Delegates at the 1953 meeting because they had not been previously published for the consideration of the delegates. These provided that the chairman of the Editorial Board be made a member of the Council, and a resolution offered a means of doing so without changing the numerical strength of the Council, by abolishing the office of second vice-president. The Reference Committee recommended, and the House of Delegates concurred, that these amendments be referred to the Committee on Constitution and Rules for study and presentation at the 1954 meeting of the Society.

A resolution providing for a review of the boun-

daries of the 12 councilor districts of the Society was approved, upon recommendation of the Reference Committee. Under this resolution, the executive secretary will review the physician population of each district, secure the views of each component society, and present this information to the Council for possible action at the time of the 1954 session.

The Reference Committee recommended for passage a resolution providing that the Kansas State Obstetrical Society co-operate with the Committee on Maternal Welfare of the Kansas Medical Society in an investigation of maternal and neonatal deaths throughout the state. The House of Delegates approved the resolution.

A resolution on mental health was reported by the Reference Committee as being one which should serve as a stimulus and a partial outline for the Committee on Mental Health and the Committee on Medical Economics. The House voted to follow the recommendation of the committee, that copies of the resolution be given the chairmen of the two committees for study and that reports of their studies be given at the 1954 session of the Society.

A resolution acknowledging the obligation of members of the Kansas Medical Society to co-operate with school personnel, parents of exceptional children, and epileptic patients, to permit such patients to attend regular classes in school, was referred to the Committee on Mental Hygiene for study and dissemination of information. This action by the House was in accordance with the recommendation of the Reference Committee.

The next resolution provided for a study of the physician's role in the matter of adoptions, the study to be made by the Committee on Child Welfare, the Committee on Maternal Welfare, and/or the Committee on Mental Hygiene. The Reference Committee recommended passage of the resolution, and the House of Delegates voted its approval.

The Kansas State Osteopathic Association sent a resolution to the Kansas Medical Society which was read and discussed. The House of Delegates established broad principles and then authorized the Council to offer assistance to the osteopathic association in any manner not violating the rules and regulations adopted by the House of Delegates. This portion of the report of the Reference Committee was adopted.

The following report of the Reference Committee regarding the matter of indigent care was approved by the House of Delegates:

"The Reference Committee reviewed the material on indigent health care as discussed during the first meeting of the 1953 House of Delegates and is of the opinion that this House is not ready at this time to act finally upon this important subject.

"We are of the opinion that the House of Delegates should have more detailed information, such as what services will finally be required and what finance will ultimately be involved. Problems affecting more than one health service should not be contracted by any one group, and under this proposal Kansas medicine is required to commit hospitals and pharmacists without their consent.

"However, we believe the Kansas Medical Society should continue to negotiate with the Kansas State Board of Social Welfare, with the Kansas Hospital Association, with the Kansas Pharmaceutical Association, and with any other group or agency necessary to develop a sound health program for the indigent of this state.

"We suggest that the House of Delegates direct the Council to study this problem further and to prepare a plan or plans that will be satisfactory to the Council and which are satisfactory to the other agencies involved.

"We recommend that this material then be prepared and sent to each component medical society in Kansas and to each delegate, for study.

"After adequate opportunity for study by the county societies, we further recommend that the president then call a special meeting of the House of Delegates, to be held on a Sunday, for final action on this subject.

"We recommend the adoption of this report."

Dr. C. H. Benage, president of the Professional Advisory Council, spoke on activities of this organization in attempting to create improved working relations between the various member professions. A motion was then made by Dr. Henry N. Tihen, seconded, and later adopted, to the effect that the "House of Delegates express its desire to continue the mutual association with the various groups on the council and to express again its appreciation for their assistance."

The House of Delegates, in accordance with a recommendation of the Reference Committee, did not adopt two resolutions introduced at the first meeting by the Kansas Academy of General Practice. Instead of adopting the first, the committee suggested that "our delegates to the A.M.A. be instructed to support any progressive advance in these principles of ethics."

The wording of the Reference Committee with regard to the second resolution sponsored by the general practice group was as follows: "The medical profession can only regulate the individual expression of any individual member or representative by reprimanding him, by withdrawing his membership, or, in the case of an employee, by requesting his resignation. These potentials are now possible."

The last item of business was the election of offi-



cers and councilors, as listed below. Two of the councilors, Dr. Floyd C. Taggart and Dr. Cyril V. Black, were re-elected. Two others, Dr. Harold M. Glover and Dr. James L. Jenson, were elected for first terms. Another new councilor, Dr. Charles E. Vestle, was elected to complete two years of the term of Dr. James G. Hughbanks, the vacancy being created by the resignation of Dr. Hughbanks.

Dr. Bernstorff, having completed his term as president of the Kansas Medical Society, relinquished the office and introduced the new president, Dr. Pyle, who promptly adjourned the meeting, and the 94th annual session was concluded.

#### OFFICERS FOR 1953-1954

President.....	Dr. Lucien R. Pyle, Topeka
President-Elect.....	Dr. Murray C. Eddy, Hays
First Vice-President....	Dr. John M. Porter, Concordia
Second Vice-President....	Dr. Clyde W. Miller, Wichita
Constitutional Secretary..	Dr. Dale D. Vermillion, Goodland
Treasurer.....	Dr. John L. Lattimore, Topeka
A.M.A. Delegate	
1952-1953.....	Dr. John M. Porter, Concordia
A.M.A. Delegate	
1953-1954.....	Dr. Laurence S. Nelson, Salina
A.M.A. Alternate	
1953-1954.....	Dr. George F. Gsell, Wichita
A.M.A. Delegate	
1954-1955.....	Dr. George F. Gsell, Wichita
A.M.A. Alternate	
1954-1955.....	Dr. Lee H. Leger, Kansas City

#### COUNCILORS FOR 1953-1954

A complete list of councilors, their districts, and the dates on which their terms expire, is printed below:

1. Dr. W. L. Anderson, Atchison, 1954
2. Dr. H. P. Jones, Lawrence, 1954
3. Dr. Charles E. Vestle, Humboldt, 1955
4. Dr. Floyd C. Taggart, Topeka, 1956
5. Dr. Harold M. Glover, Newton, 1956
6. Dr. Clyde W. Miller, Wichita, 1955
7. Dr. S. A. Anderson, Clay Center, 1954
8. Dr. A. E. Rueb, Salina, 1954
9. Dr. James L. Jenson, Colby, 1956
10. Dr. L. W. Reynolds, Hays, 1955
11. Dr. Cyril V. Black, Pratt, 1956
12. Dr. R. G. Klein, Dodge City, 1955

#### NOMINATING COMMITTEE

Five past presidents of the Kansas Medical Society were elected by the House of Delegates to comprise the Nominating Committee for 1954. Chosen for this committee were the following: Dr. L. S. Nelson, Salina, chairman; Dr. Clarence H. Benage, Pittsburg; Dr. O. W. Davidson, Kansas City; Dr. John L. Lattimore, Topeka, and Dr. Noble E. Melencamp, Dodge City.

#### EDITORIAL BOARD

At the last meeting of the House of Delegates of the 94th annual session of the Kansas Medical Society, Dr. Orville R. Clark was again named editor of the JOURNAL OF THE KANSAS MEDICAL SOCIETY, and Dr. John W. Cavanaugh was reappointed to a three-year term on the Editorial Board. Current membership of the board, composed entirely of Topeka physicians to facilitate work on the publication, includes, in addition to Dr. Clark and Dr. Cavanaugh, Dr. David E. Gray, Dr. Richard Greer, and Dr. Dwight Lawson.

#### PRESIDENT'S ADDRESS

The 94th year in the history of the Kansas Medical Society will soon have passed into history. It is fitting to remember that this organization is older in point of origin than the state of Kansas. It is also a matter of considerable pride to review briefly the history of the past 94 years and to realize that in that time no action has ever been taken officially by the Society which was not in the public interest. This is a fact of some significance, a testimony to the leadership of the Society through the years and to the consistency of the decisions made by its governing body, its Council, House of Delegates, and committees. We may all be proud of that record.

With an experience of some 30 years spent in active work in the Kansas Medical Society as a background, plus a very enjoyable and eventful year just about passed as your president, we possibly may be pardoned if we presume to pass on to you some impressions and suggestions which occur to us as a result of that experience, in the hope that it may be for the future good of an already wonderful organization.

The office of president of the Society is a truly great honor and one which is possible for only a limited number of men to attain. Consequently, it is an office of great responsibility and trust. As such, it is a constant challenge to the incumbent, presenting unlimited possibilities for activity and work. In fact, the office is rapidly assuming the proportions of a full time job and might well become so for the good of all concerned. The only saving grace at present is the fine personnel in the Topeka office and the very commendable work of the several standing committees which has been truly outstanding, for which I wish to express my appreciation and sincere thanks.

The program and activities of the Society have been creditably carried on to definite conclusions in spite of the time and energy which were of necessity devoted to the legislative session. The latter is important but always disrupts the Society program to a great extent.

Negotiations have been in progress with the Board of Social Welfare throughout the past year, and we believe we finally have some point of departure for a suitable solution to the problem of care of the indigent in Kansas. Final commitment will undoubtedly be left to the Council and the House of Delegates. Several meetings with the welfare board have served to acquaint everyone with the problems involved and, we believe, have resulted in a better understanding of the situation on the part of everyone concerned.

At the 1952 meeting of the House of Delegates a request was received for an investigation of the University of Kansas School of Medicine. A committee was appointed which went into the situation thoroughly, with the result communicated to you in a report from that committee. I am sure we can have every confidence in that report. The co-operation of the medical school authorities was truly wonderful and deserves favorable comment. The relations with the medical school are on a very high plane and, we believe, have never been more pleasant, with the prospect of continuing for the future.

Activity with regard to the legislature was interesting. Once again we were able, by a narrow margin, to preserve unadulterated the practice of medicine in Kansas. The cultists were again successfully restrained from entering the practice of medicine, for which they are obviously not prepared. This was accomplished only with the very fine co-operation of the membership at the critical time and from the grass roots level. The response of many of the members to this request for help will always be one of the fine remembrances of the year and the profession.

Out of these situations as they have developed, we have, it seems, arrived at a defensible and consistent viewpoint as regards cults, one which is apparently quite salable. Briefly stated, this is: We, as ethical members of a profession whose chief interest is the health and welfare of the people of Kansas, being unalterably committed to that interest as the natural guardians of the health and welfare of the people of Kansas, can have no logical basis for criticism of the cults with regard to their attempts to enter the practice of medicine, except their very evident lack of preparation for the same. Until such time as the cults show definite and satisfactory evidence of such preparation, we have no other course in keeping with our responsibility than to exert every effort to deny such privileges to them with the conviction that such action is in the public interest.

The matter of public relations has of late been receiving the attention it must have if we are to reclaim the confidence and respect of the American public. Our own committee, with a very able chair-

man, has done a fine job in this field. I am sure you will have received his report with much interest. We have made a creditable start in reclaiming our place in the sun as far as the admiration and respect of the general public are concerned. Much more conscientious work needs to be done.

The situation can be improved with a proper program of education of the public with regard to problems of common interest, if the medical profession is willing to take the public into its confidence and make a bona fide effort to co-operate in removing mutual misunderstandings. The program of public relations needs to be extended and amplified with the above in mind. The public is tired of getting medical information from popular magazines and rightfully expects the medical profession to provide it for them.

The Committee on Control of Cancer again sponsored the Mid-West Cancer Conference in Wichita, with a fine program highlighted with a galaxy of experts in that field. Interest and attendance showed an appreciable increase. This is one of the finest activities of the Society, and it should be given even greater encouragement.

The Auxiliary has had a fine and profitable year. Much interest is being shown in the Auxiliary program, and the group is showing a fine increase in membership. There are some areas, however, where more support is needed from the profession to the extent that the Auxiliary may be made more effective as a true ally of the profession.

Someone has said that to be a good medical assistant one has to act like a lady, think like a man, and work like a dog. That, we believe, is a true characterization. The assistants' society has had an interesting and worthwhile year. Attendance at the annual meeting showed a substantial increase, and the interest was much higher. Every encouragement should be given this program. The potentiality of medical assistants in the field of public relations would be hard to overestimate. Many of our patients get their first impression of the medical profession from the office assistant, and it is imperative to all of us that this be a good one.

The annual report of the Blue Shield organization shows a healthy condition, as far as the financial situation is concerned, with an ample reserve. A building program is in the mill. This is a necessity which is definitely indicated from the angle of good financing, as well as affording adequate space. The profession can well be proud of the prospect ahead for Blue Shield. The over-all program and development of the plan have been quite satisfactory. There is need of definite continued and even increased co-operation by participating physicians to better implement the economy program which



would mean considerable savings to Blue Cross. Perhaps even the itemization of hospital bills would be indicated.

We believe that Blue Shield, as an organization, has successfully passed the exploratory stage and that an enlarged program is in order. To this end, it would seem advisable to offer more than one type of policy to prospective buyers. It seems reasonable to suppose that one type of policy is not the answer to the desires of the public. Enrollment, which has always been a problem, must be activated to overcome the frequent remark, "Blue Shield would be best if one could buy it."

In our opinion any raise in dues at this time would be disastrous. If necessary, other means to consolidate the financial situation should be seriously considered. More definite work should be done to ascertain the cause for high cancellations in order to keep the plan sold to subscribers. The position of the general practitioner, who has been long-suffering up to date, should be carefully considered in order that he be allowed some means of participating in the payoff which, we noted last year, was in the neighborhood of one and a quarter million dollars. Without his participation, we can hardly expect his loyalty to continue.

It is becoming increasingly important to realize that the success of our future legislative program will depend upon the amount of effort exerted at the grass roots level. This program cannot be made a success through the efforts of those responsible in Topeka; it must be implemented at the grass roots. Each of us must determine now to sell the program of the state society to the legislators before they ever go to Topeka for the regular sessions. In no other way can we accomplish our goal. In the future this effort must be our individual responsibility, and failure to discharge it will cause the entire program to fail. No longer can we "let George or John do it." We will have to get the job done at home. The average doctor is not particularly interested in politics, but if we expect to be good citizens we must, of necessity, take the needed time to work in that field.

We hesitate to comment too critically in regard to the relations of the state societies and the A.M.A. However, there seems to be a considerable amount of justified grumbling as to the over-all policies of the parent organization. This seems to revolve about a feeling that the actions of the A.M.A. are not too democratic. Our own feeling, in attendance at the House of Delegates on several occasions, is that the proceedings are cut and dried before the act, and that the resulting action too often smacks of the rubber stamp technic. Perhaps some of this is due

to the lack of vocal ability on the part of the delegates themselves.

The emergency meeting of the House of Delegates in Washington just passed would make one wonder if the democratic process had been eliminated from their consideration. That one was certainly a rubber stamp affair, and we have the opinion that the meatless bone which was tossed to the medical profession at that time was hardly ample consideration for reversal of an 80-year-old policy. Neither can we agree that principles have to be sacrificed at times for politics. Such action does not add to the dignity of the profession. Some 60 million American voters asked for an end to bureaus and the usual game of politics at the last election, and the A.M.A., through its House of Delegates, gave assent to a furtherance of this nuisance.

While there may have been a ray of hope in the result of the last election as far as the menace of socialized medicine is concerned, we have the definite feeling that the threat of the same is not a minimal one. It is true that the scene may have shifted from the national picture to some extent, although nothing done by the present administration up to and including the present time offers any great encouragement along that line. It is certain that the matter has taken on certain international aspects that are not desirable, particularly as far as the efforts of the United Nations and the I.L.O. are concerned, both of which should be carefully watched by the profession for future developments. Neither does the attitude in opposition to the Bricker resolution exhibited by the present administration make one want to throw one's hat and jump for joy.

There is, however, a source of comfort in the fact that the medical profession is not fighting a lone fight in regard to socialism, as was once the case. The cause is being championed by the other professions, most notably the legal profession, and by other organizations of weight and importance in the national scene, and also internationally. This is commendatory. The cause of freedom must never be neglected by an alert, intelligent citizenry. The medical profession should take great pride in the fact that it was the first to realize the danger and take steps to oppose it. We can do much through our efforts in good public relations to defend our freedom if we will be not only good doctors but at the same time good citizens.

The general Society program must go on to completion and continue to expand to meet the emergencies of a constantly changing situation. We have the feeling that the present program, while good, is still not adequate for the ends desired. We need and can have a better program for the people of Kansas. This would require some investment in

personnel and money, but it would certainly be worth the additional cost. We have an ample reserve in the treasury to warrant an expanded program for the next few years on an exploratory basis. This we could well afford to spend as we deem it unnecessary, with our type of organization, to maintain a large reserve of idle money. Then, if the results seemed worthy of continued effort, we could provide for the expense on a permanent basis. We believe that we, as a Society, are at the point where we will need to decide soon between a small program and one that is sufficient unto the need.

The past year has been a strenuous though interesting one. We hope that it will be considered to a certain extent a successful one. We know that if it was successful, and if it is to measure up to the record of past years, most of the credit must go to those who worked so hard and loyally to make it so. In that regard we wish to express our heartfelt appreciation to the officers and members of the Society, to the committees, to the Auxiliary, to the assistants, and last, but not least in any manner, to the loyal and devoted staff in the office in Topeka. Without this fine co-operation on the part of those mentioned, we surely would have failed. And now, *au revoir*; and thanks again for your support and confidence in our attempt to do a good job for the greatest organization in Kansas.

*Warren F. Bernstorff, M.D.*

#### REPORT OF EDITORIAL BOARD

The Editorial Board is currently composed of Dr. Orville R. Clark as editor, Dr. John W. Cavanaugh, Dr. David E. Gray, Dr. Richard Greer, and Dr. Dwight Lawson. Dr. Cavanaugh's term expires at this time, and it will be the duty of the Council to fill this vacancy. Dr. Donald P. Trees of Wichita and Dr. Glen R. Shepherd of Kansas City are associate editors, assisting with the work of the board in their own localities.

The last 12 issues of the JOURNAL have contained 836 pages, or an average of 70 pages for each issue, approximately 60 per cent of which was non-advertising material, and 40 per cent advertising. This is considered a reasonable proportion of advertising material for such a publication. Included in the scientific material were 41 original papers (4 of which were from the Mid-West Cancer Conference); and 6 Clinical Pathological Conferences, 5 Tumor Conference Reports and 11 senior student theses from the University of Kansas School of Medicine.

During this year we have published three special issues. The September 1952 issue was devoted to the problems of nursing, attempting to bring to the members of the Society information regarding recent and anticipated developments in the profession

of nursing. Included were articles by hospital representatives and physicians, a survey of the nursing situation in Kansas as made by the Kansas State Board of Health, several resolutions adopted or proposed by various nursing groups, and listings of the schools of nursing in Kansas which were and were not at that time given temporary accreditation by the recently created National Nursing Accrediting Service. It was expected that we would have articles from nurses and nursing organizations expressing their points of view, but circumstances beyond our control prevented our having these articles.

In March 1953 the Seventh Annual University of Kansas School of Medicine number appeared. The greatest part of the work of assembling and editing the papers in this issue was done by Dr. Glen R. Shepherd, of the School of Medicine. Dr. Shepherd did an excellent job of collecting and preparing this material, and deserves full credit for doing so.

The third special issue was the program number in April 1953, with the program for the annual meeting of the Society, the annual reports of councilors, committee chairmen, etc.

There has been some discussion in Editorial Board meetings of the possibility of publishing further "special editions" dealing with associated activities or problems, such as the present problem of the welfare program in the state, about which we have had considerable discussion. We would appreciate an expression of the opinions of the members of the House of Delegates—either officially or individually—as to whether such issues are desirable.

To comply with postal regulations and maintain our present favorable mailing rate, we are now able to send the JOURNAL only to paid subscribers and to those few for whom specific provision is made in the postal regulations, which includes advertisers and advertising agencies. Thus, for the first time, \$2.00 of each member's dues is transferred to the JOURNAL, in return for which that member receives the JOURNAL. Now, also for the first time, honorary members and those in service or on leave of absence—those who do not pay dues—receive the JOURNAL only by paying a \$2.00 per year subscription (one-half the published subscription price). There are 78 of this group of 227 who have paid for their subscriptions and are receiving the JOURNAL. There are 1,617 dues-paying members on the subscription list, and our total circulation has averaged 2,100 during the past year.

No detailed financial report is included on this occasion, but I am pleased to be able to tell you that the JOURNAL has operated well within its income. Receipts for the year ending May 1, 1953, were \$16,958.14, exclusive of the \$2.00 paid to the



JOURNAL for each dues-paying member of the Society. During the same period the expenses were \$16,110.07. There was a total balance of \$4,158.31 on deposit in the bank on May 1. Further details are available to any who may desire to have them, but will not be included here.

During the current year a change in printers has been effected. The JOURNAL has for many years been printed by the Capper Printing Company, of Topeka, but situations have developed which made continuation of this arrangement unsatisfactory. There was no dissatisfaction with the quality of the work, but it seemed impossible to get proofs and final publications at specified times, due to conflicts with other commitments by the printer. In May 1952 our JOURNAL was 10 days late in being mailed, and at the same time we were notified of an increase of approximately 24 per cent in printing charges, to be effective in October 1952. It should be stated, in fairness, that this increase in cost was not unreasonable considering price trends generally, and was not the reason or any part of the reason for considering a change in printers.

Most of our advertising is obtained through the State Journal Advertising Bureau, an A.M.A. bureau which serves the same function for a high percentage of state medical journals. Publication dates, which must be kept in line with other publications using this same advertising, could not be met by the Capper Printing Company. After careful consideration, it seemed that a change of printers should at least be considered.

Bids were requested from six printing firms in Topeka, Lawrence, and Wichita—the only printers in the state who were physically equipped to consider our publication as far as we could determine. At about the same time we received from The Ovid Bell Press, Inc., in Fulton, Missouri, a request that a bid might be submitted for the printing of our JOURNAL, and the entire group were considered together.

After careful consideration of all possibilities, the bid of the Ovid Bell Press was felt to be that which offered the most to us, and after approval by the Council, this bid was accepted. Advantages offered included proofreading by experienced readers who are accustomed to medical terms since this firm also prints the journals published by the state medical societies in Iowa and Missouri, and numerous medical publications of Charles C Thomas, in Springfield, Illinois; publication could be done at the time of the month required by the schedules of the State Journal Advertising Bureau; the charges seemed reasonable, and the printer would receive and store all the advertising plates—a service not enjoyed before.

The only disadvantage which we could find in making such a change was that it was a firm outside

Kansas, but in view of the fact that the Ovid Bell Press could offer us specialized medical printing services which no printer in Kansas could offer, the change seemed to be to our advantage. As stated, the Council concurred in this opinion, and the change in printers became effective with the March 1953 issue. We are confident that the change is going to be for the good of the JOURNAL—and so for the Society.

In the past year, as before, the JOURNAL has had the problem of obtaining sufficient scientific articles for the expanded JOURNAL as we are trying to maintain it. As noted in previous reports of other editors, there is within the state sufficient clinical material and medical talent for the development of many good medical papers. However, there is always the problem of getting the articles written, and submitted for publication. Admittedly it is not a simple task, for writing a good medical paper is not done in a spare evening, but requires care and thought over a period of time, reading of related literature, compiling bibliographies, and the like. But it all makes for progress of our Society.

I would like to urge that every member of the Kansas Medical Society seriously ask himself whether he has had some experience that merits consideration for publication as a scientific article. Of course not all will have articles to write, and we certainly could not publish 1,600 articles, but it would be a delightful experience to have a large number of papers from which to choose the best for publication—and would be insurance toward having a good scientific section in the JOURNAL.

One outstanding reason for a continuous shortage of scientific papers is the fact that the JOURNAL is not having the opportunity to publish the presentations given at the annual meetings as was done in years gone by. Specifically, in 1947, 9, and in 1948, 10, of the presentations at the annual meeting were published in the JOURNAL. During the past year we have had only one paper from the 1952 meeting, and at the time of the beginning of this meeting indications were that we would have none from the present session as some of the speakers have come only with the stipulation that they will not be expected to furnish manuscripts of the addresses given. Although it is specifically stated in our By-Laws (Chapter IV, Section 9) that ". . . every paper read before this Society desired by the Editorial Board for publication in the JOURNAL shall be deposited with the Secretary as soon as possible after its presentation . . ." it is apparent that it is increasingly difficult to obtain material from this source, which was, in the past, an excellent reserve on which we could rely for scientific material.

Admittedly not all talks at the annual meetings—or elsewhere—are desirable or suitable for publication as presented. However, realizing that probably not over a third of the membership of the Society hears any one address at the annual meeting, we feel that the JOURNAL has some obligation to disseminate to the full membership of the Society more of the scientific information which was made available at the meeting—and this can be done only through publication of papers which are presented there. We feel that the membership of the Society as a whole could be benefited by making publication of more of these presentations possible.

It would seem that if this section of the By-Laws is to be so completely ignored, it might be better to repeal it.

As a suggestion for supplementary sources of scientific papers, we respectfully suggest that some of the presentations at county society meetings, regional meetings (such as the Golden Belt Medical Society), and the various postgraduate meetings at the University of Kansas would be most welcome by the Editorial Board. It is our sincere desire to make the scientific section of the JOURNAL the "backbone" of each issue, feeling that new medical information is the thing most wanted from a scientific publication by our members. If it is the desire of the membership of the Society to have this sort of JOURNAL, it would assist us in our attempt to make it so if more articles were offered for consideration from all components of the membership.

I would be remiss in making this report to omit an expression of my gratitude to all those whose cheerful co-operation and extensive efforts have made possible the publication of the JOURNAL during the past year. Foremost among these is Miss Pauline Farrell, whose unfailing patience and tireless, efficient work as managing editor have covered up many of the shortcomings of a new editor unfamiliar with most of the problems concerned with publication of such an organ. The sound advice of our executive secretary, Oliver Ebel, his numerous contributions of editorial comment, and general helpfulness in planning have been the great assistance that all of you would expect it to be. As Rueben Dalbec becomes more familiar with Society activities, we look forward to his increasing participation in JOURNAL affairs. To the other members of the Editorial Board I want to express my appreciation for their extensive work in reading manuscripts and editing them for the printer, reading proofs, and for furnishing greatly-needed advice on various matters of policy. To the associate editors, I extend my appreciation for the efforts extended for the JOURNAL in their localities. Dr. Shepherd has, in addition to the preparation of the University

of Kansas issue, edited the Clinical Pathological Conferences and senior theses, and helped with preparation of other material from the university. Dr. Robert E. Stowell has edited the Tumor Conference Reports appearing bi-monthly from the University of Kansas School of Medicine, alternating with the Clinical Pathological Conferences.

It has been a pleasure to have served as your editor for the last year. The task was undertaken with humility, and I feel the same as we look ahead, but still have the hope that with continued co-operative effort we can make the JOURNAL more useful to the membership of the Society year by year. This is, after all, the only justification for its existence.

*Orville R. Clark, M.D., Editor*

#### BLUE SHIELD

Dr. Henry S. Blake, Topeka, was re-elected president of Kansas Blue Shield at the annual meeting of the Board of Directors of Kansas Physicians' Service, held at the Allis Hotel, Wichita, May 3. Other officials elected are: Dr. Lloyd W. Reynolds, Hays, vice-president; Dr. Francis T. Collins, Topeka, secretary-treasurer, and Dr. R. P. Watterson, McPherson, executive vice-president.

Newly elected members of the board, and the councilor districts they represent, are: District 1, Dr. E. T. Wulff, Atchison; District 8, Dr. H. S. Dreher, Sr., Salina; District 10, Dr. A. M. Cherner, Hays; District 11, Dr. S. T. Coughlin, Larned.

The most important accomplishment of the meeting was the decision to offer extended benefits in the form of an optional rider to the present Blue Cross and Blue Shield agreements. These benefits will include additional treatment of poliomyelitis and eight other diseases. The new coverage is explained more fully in the regular Blue Shield column on Page 267 of this issue of the JOURNAL.

#### MEDICAL VETERANS' SOCIETY

An informal meeting of the Medical Veterans' Society was held at the Broadview Hotel, Wichita, on Wednesday morning, May 6, following a breakfast. All members of the Kansas Medical Society who are veterans were invited to attend, and approximately 75 were present.

Dr. Henry S. Blake, Topeka, who is a member of the Executive Committee of the national medical veterans' organization, reported on Congressional hearings held recently on H.R. 4495, a bill designed to extend and amend the present doctor-draft law. Dr. Blake, who was one of the witnesses at the hearing, outlined 14 amendments to the bill suggested by the veterans' group and reported that 11 were approved by the Congressional committee. Dr.



John W. Warren, Jr., Wichita, and Dr. Francis T. Collins, Topeka, led the discussion.

Particular attention was given to two proposed amendments. One provided for a ratio of three physicians to 1,000 persons in military service, with only the President of the United States having authority to raise or lower that ratio. That amendment was unanimously approved by the Kansas veterans.

There was also discussion of a proposal that older physicians in Group 3 be given an opportunity to serve along with younger physicians.

Plans were made for presenting the views of the organization to members of the Senate, where hearings were scheduled to begin on May 18.

#### KANSAS STATE OBSTETRICAL SOCIETY

Members of the Kansas State Obstetrical Society held a dinner meeting at the Hotel Broadview, Wichita on Tuesday, May 5. A constitution for the society was adopted.

Dr. Frank R. Lock, Winston-Salem, outlined experiences in North Carolina in an attempt to lower the maternal mortality rate. Dr. L. A. Calkins, Kansas City, outlined the program for the refresher course in obstetrics to be presented at the University of Kansas Medical Center next November.

The following officers were elected: president, Dr. Robert H. Maxwell, Wichita; president-elect, Dr. Donald A. Anderson, Salina; vice-president, Dr. Anthony B. Busch, Dodge City; secretary-treasurer, Dr. Robert M. Carr, Junction City. The immediate past president, Dr. Robert G. Heasty, Manhattan, remains on the board of directors of the organization.

#### E.E.N.T. SOCIETY

Specialists in eye, ear, nose, and throat practice held a business meeting at the close of their scientific program at Wichita on Tuesday, May 5. Dr. George F. Gsell, Wichita, was elected president of the group for the coming year. Dr. Thomas L. Hill, Arkansas City, was named vice-president, and Dr. Paul Trimble, Emporia, was chosen secretary-treasurer. The group's delegate is Dr. William P. McKnight, Wichita.

#### KANSAS SOCIETY OF PATHOLOGISTS

A meeting of the Kansas Society of Pathologists was held at the Lassen Hotel, Wichita, on Tuesday, May 5, following a dinner. Reports were given from all committees, and projects for the coming year were discussed. The following officers were elected: president, Dr. William P. Callahan, Jr., Wichita; vice-president, Dr. William J. Reals, Wichita, and secretary-treasurer, Dr. Bert E. Stofer, Wichita.

#### KANSAS PSYCHIATRIC SOCIETY

Three Topekan were recently elected to office in the Kansas Psychiatric Society, Dr. William Rottersman as president, Dr. R. C. Anderson as vice-president, and Dr. John R. Adams as secretary-treasurer. Two new councilors of the group are Dr. William F. Roth, Jr., Kansas City, and Dr. Glenn Q. Street, Jr., Wichita.

#### KANSAS ORTHOPEDIC CLUB

The annual meeting of the Kansas Orthopedic Club was held in Wichita on May 6 with Dr. M. E. Pusitz, Topeka, 1953 president, presiding.

Dr. H. O. Marsh, Wichita, reported that he had written 120 orthopedic surgeons in Kansas, Oklahoma, Nebraska, Missouri, and Arkansas about the formation of a joint orthopedic society and had received 60 favorable replies. The group voted to plan a one-day meeting of orthopedists, tentatively called the Central Orthopedic Society, to be held in Kansas City in the fall, immediately preceding the meeting of the Kansas City Southwest Clinical Society. It was decided that Dr. Marsh should send invitations to all who had replied to his letter, and Dr. Clarence L. Francisco and Dr. W. David Francisco, Kansas City, were asked to arrange details. The function of the new group is to be clinical in character, rather than academic or didactic.

The Kansas Orthopedic Club, with membership available only to those restricting their practices to orthopedic surgery, will meet annually at the time of sessions of the Kansas Medical Society.

Dr. H. O. Anderson, Wichita, who became president of the Kansas group at the Wichita meeting, introduced Dr. Hugh Smith, Memphis, who spoke on fracture work.

Dr. Marsh was named secretary-treasurer of the organization.

#### KANSAS ACADEMY OF GENERAL PRACTICE

An all-day session of the Kansas Academy of General Practice was held at the Broadview Hotel, Wichita, on Monday, May 4, and included all items scheduled in the program published in the April issue of the JOURNAL.

At the business session, the following officers were elected: president, Dr. George E. Burket, Jr., Kingman; president-elect, Dr. Harry Lutz, Augusta; vice-president, Dr. Clovis W. Bowen, Topeka; secretary-treasurer, Dr. Harold L. Low, Wichita; executive secretary, Mr. Eugene Wilcox, Winfield.

Elected to the board of directors were Dr. Charles L. White, Great Bend; Dr. H. B. Sullivan, Shawnee, and Dr. Bruce P. Meeker, Wichita. Chosen as delegates to meetings of the American Academy of Gen-

eral Practice were Dr. George L. Thorpe, Wichita, and Dr. Arthur W. Feghtly, Wichita.

#### KANSAS SOCIETY OF ANESTHESIOLOGISTS

Officers of the Kansas Society of Anesthesiologists, elected at the annual meeting of the organization in Wichita, are as follows: president, Dr. L. L. Lafé Bresette, Kansas City; vice-president, Dr. James L. Jenson, Colby; secretary, Dr. Wray Enders, Kansas City, and treasurer, Dr. Floyd C. Taggart, Topeka.

#### KANSAS HEART ASSOCIATION

Dr. Lee H. Leger, Kansas City, took office as president of the Kansas Heart Association at the annual meeting of the organization held at Emporia on May 15. Elected to serve with him during the year were the following: president-elect, Dr. Clarence W. Erickson, Pittsburg; vice-president, Dr. G. Loren Norris, Winfield; secretary, Mr. Frank Sullivan, Topeka; treasurer, Mr. Willard Briedenthal, Kansas City.

#### WOMAN'S AUXILIARY TO K.M.S.

Mrs. I. Joseph Waxse, Oswego, took office as president of the Woman's Auxiliary to the Kansas Medical Society at the close of the 1953 Auxiliary session in Wichita. Assisting her during the 1953-1954 year will be the following officers: president-elect, Mrs. E. R. Millis, Kansas City; first vice-president, Mrs. William J. Braun, Pittsburg; second vice-president, Mrs. James L. Jenson, Colby; third vice-president, Mrs. Clyde E. Partridge, Emporia; recording secretary, Mrs. Edwin M. Harms, Wichita; treasurer, Mrs. H. R. Schmidt, Newton; corresponding secretary, Mrs. John B. Dixon, Parsons.

#### KANSAS MEDICAL ASSISTANTS' SOCIETY

Mrs. Lerah Lacey, Topeka, was installed as president of the Kansas Medical Assistants' Society at the close of the organization's two-day meeting in Wichita, immediately preceding the meeting of the Kansas Medical Society. The following officers were chosen to serve with her: president-elect, Miss Agnes K. Burns, Kansas City; vice-president, Miss Bessie Parker, Emporia; secretary, Miss Margaret Lenherr, Topeka; treasurer, Mrs. Mary Baker, Wichita.

Three councilors were also named for two-year terms: Miss Pauline Farrell, Topeka, for District 1; Mrs. Hazel B. Fletcher, Hays, for District 4, and Miss Carmen Jiminez, Syracuse, for District 5. Since the meeting the president, Mrs. Lacey, has announced the appointment of Mrs. Pauline Keller, Topeka, as corresponding secretary for the year.

#### SPORTS EVENTS

Sports events at the 94th annual session, golf at McDonald Park, shooting at the Arkansas Valley

Gun Club, and a tournament banquet at the Broadview Hotel, attracted good attendance on Monday, May 4.

Officers of the Kansas Medical Golf, Trap, and Skeet Association, elected at a business session following the banquet, are as follows: president, Dr. James W. Shaw, Wichita; vice-presidents, Dr. H. Lee Barry, Wichita (golf), and Dr. H. E. Haskins, Kingman (trap); secretary-treasurer, Dr. Fred N. Bosilevac, Kansas City; directors, Dr. John L. Lattimore, Topeka; Dr. Charles F. Taylor, Norton; Dr. H. Penfield Jones, Lawrence; Dr. George D. Marshall, Colby; Dr. Ed Ashley, Chanute, and Dr. A. J. Rettenmaier, Kansas City.

A new office was created, that of publicity director, and it was decided that the physician holding this office reside in the city in which next year's tournament will be held. It was suggested also that the publicity director serve as chairman of the sports program for next year. Dr. Frederick L. Ford, Topeka, was elected to the position.

In the championship flight of the golf tournament, Dr. Lattimore and Dr. Jones tied for low gross score with 77's, and by a flip of a coin Dr. Lattimore was declared winner. Dr. John F. Coyle, Coffeyville, and Dr. Harry O. Anderson, Wichita, had first and second low net scores.

Dr. David Taylor, Norton, had low gross score in the first flight; Dr. George D. Marshall, Colby, low net; Dr. Donald J. Cronin, Wichita, second low gross; Dr. Charles R. Rombold, Wichita, second low net.

Winners in the second flight were: Dr. George J. Millet, Larned, low gross; Dr. Robert L. Kasha, Wichita, low net; Dr. Leo K. Crumpacker, Wichita, second low gross; Dr. Frederick L. Ford, Topeka, second low net.

In the third flight the winners were: Dr. H. R. Hodson, Wichita, low gross; Dr. Glenn Q. Street, Wichita, low net; Dr. Raymond J. Leiker, Great Bend, second low gross; Dr. H. R. Smith, Lincoln, second low net.

Among the trapshooters, prize winners were: Dr. James L. Jenson, Colby, best score; Dr. Edward A. Smiley, Junction City, second; Dr. G. A. Surface, Ellis, third; Dr. W. A. Smiley, Junction City, fourth; Dr. James W. Shaw, Wichita, tyro best novice.

Dr. Edward S. Brinton, Wichita, had the best score among the skeetshooters. Other winners were: Dr. Fredrick F. Nyberg, Wichita, second; Dr. Clayton L. Scuka, Wichita, third; Dr. Harry J. Davis, Topeka, fourth; Dr. George L. Gill, Sterling, fifth; Dr. Louis S. Roberts, Wichita, tyro best novice.

Special prizes were won by Dr. James A. McLaughlin, Wichita, oldest golfer participating; Dr. James P. Schweinfurth, Wichita, booby prize, and Dr. Leo



Cowley, Wichita, winner among physicians serving residencies.

Additional golf and shooting prizes were awarded to the following: Dr. Ed Ashley, Chanute; Dr. A. L. Ashmore, Wichita; Dr. Byron J. Ashley, Topeka; Dr. Arthur H. Bacon, Wichita; Dr. Fred N. Bosilevac, Kansas City; Dr. Ward E. Benkelman, St. Francis; Dr. J. A. Blount, Larned; Dr. Marlin W. Carlson, Ellinwood; Dr. Orville R. Clark, Topeka; Dr. Ralph E. Cheney, Salina; Dr. Murray C. Eddy, Hays; Dr. E. S. Edgerton, Wichita; Dr. Richard R. Howard, Winfield; Dr. W. C. Goodpasture, Wichita; Dr. George F. Gsell, Wichita; Dr. Wilson K. Hobart, Topeka; Dr. Ernest E. Harvey, Salina.

Dr. Millard W. Hall, Wichita; Dr. James H. Holt, Wichita; Dr. Joseph J. Hovorka, Emporia; Dr. A. E. Hiebert, Wichita; Dr. Leeman C. Joslin, Harper; Dr. Leslie E. Knapp, Wichita; Dr. Charles V. Minnick, Junction City; Dr. H. O. Marsh, Wichita; Dr. Clifford J. Mullen, Kansas City; Dr. R. Morris, Wichita; Dr. Fred J. McEwen, Wichita; Dr. Weir Pierson, McPherson; Dr. Will D. Pitman, Pratt; Dr. A. J. Rettenmaier, Kansas City; Dr. Martin J. Rucker, Sabetha; Dr. Dean Jack Tiller, Wichita; Dr. Charles F. Taylor, Norton, and Dr. J. A. VanCleve, Wichita.

## COUNTY SOCIETIES

A joint meeting of the Nemaha County Medical Society and Auxiliary was held at the Community House, Seneca, on April 29. Physicians and their wives from Brown and Marshall counties were also guests. Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was guest speaker, discussing the operation of the school.

The Barton County Medical Society sponsored a surprise party honoring Dr. H. W. Jury, Claflin, on the occasion of his 78th birthday. Forty physicians and their wives attended the dinner. Dr. M. O. Steffen, Great Bend, was master of ceremonies.

A meeting of the Tri-County Medical Society was held at Hardtner on April 15. Two Wichita physicians, Dr. N. C. Nash and Dr. Paul H. Wedin, presented a program on "Cancer of the Lung."

A clinical pathological conference was the feature of a meeting held by the Sedgwick County Medical Society at the Broadview Hotel, Wichita, on May

19. Taking part were Doctors B. E. Stofer, William J. Reals, William P. Callahan, Jr., C. T. Hagan, and J. R. Fulton.

Officers for the year 1954 were elected at the meeting, as follows: president, Dr. Harold F. O'Donnell; vice-president, Dr. Norton L. Francis; secretary, Dr. Ernest W. Crow; treasurer, Dr. Bert E. Stofer; censor, Dr. Earl L. Mills. Elected to three-year terms on the board of directors were Dr. William P. Callahan, Jr., Dr. Howard C. Clark, and Dr. George F. Gsell.

## RESEARCH GRANT TO K. U.

A \$34,000 research grant from the National Heart Institute has been awarded Dr. E. Grey Dimond, Dr. Tom R. Hamilton, and Dr. Kurt Reissmann, of the University of Kansas Medical Center, for research in the field of experimental pulmonary hypertension.

The project will consist of inducing rheumatic fever in animals for the purpose of producing mitral stenosis, the usual heart valve damage occurring in human beings after rheumatic fever. Measurement of blood pressure and oxygen content of the blood will help determine the effect of heart valve damage over a period of time. The ability of heparin to protect the heart against streptococci will also be studied.

## FILM SUPPLEMENT AVAILABLE

The Committee on Medical Motion Pictures of the A.M.A. announces publication of a supplement to the list of health education motion pictures cleared for use on television. Listed are 38 pictures approved since publication of the original list in 1951. A supplement to the list of films available through the A.M.A. motion picture library is also available. Copies may be secured from the Committee, 535 North Dearborn Street, Chicago 10, Illinois.

## DEATH NOTICES

ANSON SIDNEY LUTGEN, M.D.

Dr. A. S. Lutgen, 75, an active member of the Northwest Kansas Medical Society, died at Colby on April 23, after having suffered a cerebral hemorrhage on April 7. A graduate of Lincoln, Nebraska, Medical College, Dr. Lutgen practiced in Wayne, Nebraska, for many years, moving to Colby in 1949. He was a member of the Rotary Club and of the Chamber of Commerce in Colby.

# Clinical Pathological Conferences\*

## CASE PRESENTATION

Dr. Neal Jenkins, resident, medicine: The patient, a 67-year-old white male, was admitted twice to KUMC. His first admission was 11 months prior to the second and last admission.

Chief complaints on the first admission were weight loss of 20 pounds in two months, nervousness of four years duration, and abdominal pain.

The patient, a carpenter, was well until approximately four years before this admission, when he began to note lower abdominal pain of dull, aching character located primarily in the suprapubic region. This was not associated with any genitourinary or gastrointestinal symptoms, but was aggravated by lifting. The discomfort also was associated with nervousness which consisted of a tremor of the hands at rest but more severe on movement. Approximately two years prior to this first KUMC admission, the patient was seen by his local physician with the chief complaint of pigmentation on the arms and back and some mottling of the skin of his mouth. Blood pressure 70/40, weight 125 pounds.

The patient improved during treatment, with subsequent rise to 140 pounds body weight. He remained in fairly good health until approximately two months prior to admission, when he began to note progressive weight loss associated with extreme weakness. X-rays of the kidneys, stomach, and colon done by the local physician at that time were essentially negative and the patient was referred to KUMC for evaluation.

The family history was essentially negative.

Past history revealed a syphilitic infection (chancre) at age 19, the treatment for which the patient did not remember, and a mumps orchitis at age 15.

System review was essentially negative except for partial deafness of six years duration and transient episodes of ankle edema.

On physical examination the patient appeared to be poorly nourished and chronically ill, and he constantly moved hands, arms, and legs in nervous gestures. Pulse was 80, respiration 20, blood pressure 155/80, weight 123 pounds. An area of brownish pigmentation, 3 by 4 centimeters, was noted over the posterior thorax, and similar lesions were noted in the buccal mucosa. The remainder of the head and neck was essentially normal. Examination of the chest revealed a slight left scoliosis of the lower thoracic vertebrae with apparent increase in

anteroposterior chest diameter although the thoracic excursions were good. The lungs were clear to percussion and auscultation. The heart was not enlarged, the sounds were distant, and a grade I systolic murmur was heard at the base and at the apical area.

The smooth, non-tender liver edge was palpable three fingers breadth below the right costal margin. The spleen was questionably palpable at the left costal margin. Slight tenderness was noted two centimeters below the umbilicus, but no other tenderness or palpable mass was noted. The right testicle was atrophic. A small 2 mm. nodule was found attached to the epididymis of the left testicle. No hernias were present. Rectal examination revealed a smooth, hard, non-movable enlarged prostate. One-plus edema of the ankles was noted bilaterally.

Neurological examination revealed intact cranial nerves. Superficial and deep reflexes were physiological, and no pathological reflexes were noted. The tremor of the hands and legs previously described was seen. No sensory changes were noted.

Laboratory examination: urinalysis, sp.gr. 1.014, trace albumin, sugar negative, occasional granular casts, two to three pus cells per high power field; RBC 4,440,000; WBC, 6,500; hemoglobin 12.5 grams (81 per cent).

Differential: 53 polys, all filamented; 39 lymphocytes and 8 monocytes. Serology was negative. NPN 45, creatine 1.8, sugar 86 mgm. per 100 cc., serum potassium 5.1 meq., serum chloride 108 meq. Cholesterol 168 mgm. per 100 cc., with 48 per cent esters. Gastric analysis revealed no free hydrochloric acid. Acid phosphatase 0.41, alkaline phosphatase 2.8. Thorne test with adrenalin base line of 77 eosinophiles decreased in four hours to 38 eosinophiles. Kepler-Power water test: night volume 1495 cc.; the largest single hourly day volume was 182 cc. This gave a factor for the Kepler-Power "B" test of 1.3. 17-ketosteroids 12.17 mgms. in 24 hours. Erythrocyte sedimentation rate was 10 mm. in one hour.

Following the completion of these diagnostic studies, the patient was discharged to his local physician. The patient gained weight and resumed his occupation as a carpenter. He remained in good health for 10 months, until approximately one month prior to his second admission, when he began to note cough and hoarseness. He was hospitalized in his local hospital for approximately two weeks prior to his admission because these symptoms persisted, and was subsequently referred to KUMC for evaluation.

The physical examination at the time of the sec-

\* From the University of Kansas Medical Center. Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the departments of medicine, radiology, and pathology, and the junior and senior classes of medical students.



ond admission showed an extremely emaciated white male who seemed to be mentally confused and did not know the reason for his admission to the hospital. Pulse was 120, respiration 22, blood pressure 150/90, temperature 98.8° F. The eyes were sunken and the neck veins quite distended. The head and neck otherwise were essentially normal.

Examination of the chest revealed a Cheyne-Stokes type of respiration with a loud ronchi in the right anterior chest. Coarse dry rales were heard in both posterior lung fields, and dullness was noted in the right base posteriorly. The PMI was in the fifth interspace 2 centimeters outside the midclavicular line. A grade I systolic murmur was heard at the mitral and aortic areas.

A slightly tender liver was palpable four fingers breadth below the costal margin. The spleen was not palpable. A one- to two-plus edema of the legs was noted, more marked on the right. A generalized hyporeflexia was noted.

Laboratory examination: urinalysis, faint trace albumin, sugar negative, many granular casts, occasional hyaline casts, and 12 red blood cells per high power field; RBC 3,950,000; WBC 9,000; Hb 11.8 gms. (76 per cent).

Differential: 76 polys, all filamented; 10 lymphocytes, one basophil, 13 monocytes. NPN 25, creatine 1.0, sugar 80, CO<sub>2</sub> 30.4, serum chloride 100 meq. Erythrocyte sedimentation rate was 20 mm. in one hour, a straight line curve. No ova or parasites were seen in the stools. Prothrombin time was 30 per cent of normal. Bronchial washings for the T.B. culture were negative at the end of eight weeks.

On the day following admission, laryngoscopy and bronchoscopy were done. A nodular mass was found involving the right vocal cord, and a biopsy was taken. The following day the patient became more irrational and almost stuporous; on the third day, he was found to be in a semi-comatose state, with a pulse rate of 130, blood pressure 140/100, respiration 48, and coarse rales in bronchi and both lung fields. Treatment consisted of oxygen by nasal catheter, intravenous aminophyllin, intermittent tracheal suctioning, and digitalization. The condition of the patient had improved markedly in four days, although fluid was still noted in both lung fields. On the 10th hospital day, at about 3:45 p.m., the patient felt severe pain in the right chest. A loud pericardial friction rub was noted, and the patient was treated with morphine with relief of the pain. He subsequently was placed at complete bed rest, given a low sodium diet and papaverine grains one every four hours.

The following day a gallop rhythm was noted, and throughout the remainder of the patient's hospital course there was a daily temperature elevation from 99° to 100.3°. Penicillin and subsequently

tetracycline were given. The condition of the patient progressively deteriorated. A paroxysmal ventricular tachycardia developed during the 20th hospital day. In spite of supportive measures, the patient died at 10:15 p.m. the following day.

Dr. Mahlon H. Delp, Chairman: Significant, and I believe of some interest, is not only the patient's age but the presenting complaint of pain in the lower abdomen. Two significant physical findings at that time were the abnormal and unusual pigmentation of the skin and a blood pressure which was recorded as 70/40.

We can assume that subsequently the patient must have been treated in some successful manner because for the following two years he was relatively symptom-free. Then he presented himself with something rather unusual, namely, difficulty in respiration and hoarseness. He subsequently was sent here on the nose and throat service.

Of further interest is the course in the hospital. First of all, the patient developed a severe complication following a minor nose and throat procedure, laryngoscopy with biopsy. Whether or not it was a complication of this procedure, I am not certain. Subsequently, he had signs of extreme dyspnea associated with tachycardia and a pain in the chest.

The intern who saw him within a matter of minutes after the original complaint states that the patient had a loud friction rub over the entire anterior portion of the chest. No comments were made as to how long this friction rub lasted, but it probably was several hours. The patient was given several small doses of opiate and apparently the friction rub aroused no comment subsequently, but he continued to have some pain for a number of hours. About five doses of opiates were given before he was finally sufficiently relieved. There is frequent reference to the patient's abnormal mental state. On the admission day, his wife told the attending physician that the patient recently had been disoriented each night.

We are charged with the responsibility of making a diagnosis, if possible, as to the illness two years prior to this last hospital admission, the illness at the time he arrived here, and finally, the terminal event in this case.

May we see the x-rays?

Dr. Charles Montgomery (radiology): These two films were taken during the first admission. The other three films were taken two weeks before death. The first chest film was interpreted as essentially normal. The markings were a little accentuated—a hard quality interpreted as some degree of fibrotic change but essentially a normal chest. No pathology could be demonstrated in the KUB film. The kidney shadows were not entirely outlineable.

The film taken a year later shows an entirely different picture. There was opacity in each of the bases

in a meniscus fashion, complete opacity characteristic of a pleural exudation. The cardiac shadow in its entirety is not outlineable because of the opacity. This was interpreted as an enlarged failing heart, with pleural effusion.

A portable film a few days later showed little change from previous ones. And again there was the same picture five days later.

#### DIFFERENTIAL DIAGNOSIS

Mr. Leo Cooper (senior student): Today's case presents a few conflicting findings which tend to confuse one's thinking as to the cause and course of this patient's illness.

One is obligated to consider the findings two years prior to his admission here because they are suggestive as to his later course. At that time the patient had lower abdominal pain, fever, pigmentation of arms and back, mottling of the oral mucosa, and blood pressure of 70/40. This patient then received treatment—we do not know for sure what it was. He remained in fairly good health for approximately two years, thereafter developing marked weight loss and extreme weakness. It was at that time that he was admitted here for diagnostic work-up. He was discharged and, we presume, again received treatment from his local physician. He responded and remained fairly well for approximately 10 months, then developed cough and hoarseness which persisted, and again he was admitted to this hospital.

On this second admission the patient was extremely cachectic, confused, and mentally disoriented, and obviously in congestive failure. Such a clinical progression of events is strongly suggestive of chronic adrenal insufficiency. However, there are several other conditions which should be considered.

*Hemochromatosis* may present a picture similar to this, with a pigmentation that could be confused with that of chronic adrenal insufficiency. However, such pigmentation tends to be more generalized and is a bronze tint of the skin rather than the brown pigmentation one sees in chronic adrenal insufficiency. This patient had weakness and weight loss, which are common complaints in hemochromatosis, probably due to liver involvement. The liver was palpable, which would go along with the diagnosis. Diabetes is said to occur in at least 75 per cent of cases of hemochromatosis. The patient had a normal blood sugar on the first admission.

*Portal cirrhosis* is a possibility in this case. We have a negative history as far as dietary insufficiency and alcoholism are concerned. No ascites was present, although it is a rather common finding. Weakness and weight loss are common complaints in portal cirrhosis. On the last admission here, this patient

did have a prothrombin time of 30 per cent of normal. Part of this might be due to the presence of congestive failure.

*Pellagra* is another possibility. Again, there is no dietary history. Pellagra can produce the symptoms presented. The pigmentation in pellagra might resemble that in adrenal insufficiency. It starts out as an erythematous rash on the exposed parts of the body, and the skin becomes thick and crusty. Stomatitis and glossitis are common—we do not have those in this case. Other findings suggestive of pellagra are achlorhydria, which this patient did have, low blood pressure, weakness and tremor, and marked mental changes.

*Malignancy of the gastrointestinal tract* should be mentioned in the case of a patient of this age who had a progressive weight loss and weakness. However, the fact that the history extends over such a long period of time and that improvement occurred after treatment would lead one to disregard this possibility.

*Chronic adrenal insufficiency* must receive prime consideration in any case with hypotension, pigmentation, weight loss, and extreme weakness. Additional findings compatible with this diagnosis were nervousness, restlessness, and movements of the hands and arms. Abdominal pain is said to occur in one-third of such patients. This patient's heart was not markedly enlarged; one would expect to find a small heart. Sounds were reported to be distant on the first examination here. The liver was palpable; visceral ptosis is said to occur in many cases of chronic adrenal insufficiency.

Laboratory findings which would be compatible are the achlorhydria, the relative lymphocytosis, and a strongly positive Kepler-Power water test.

On the other hand, there are several findings which are contradictory to such a diagnosis. This patient had a Thorne test which indicated an active adrenal cortex. This test is not infallible. The blood pressure on the first admission was 155/80 and 150/90 on the second. This might be explained if he had received treatment with desoxycorticosterone acetate. We might expect to see an electrolyte pattern of greater imbalance than this patient showed. However, treatment might cloud the picture. Also, one would expect to find a more marked decrease in the 17-ketosteroids. I have no explanation as to why the ketosteroids were not reduced more. Absence of an eosinophilia would be expected and was present.

If we assume that this patient did have chronic adrenal insufficiency, the next question would be whether it was primary or secondary to pituitary involvement. The clinical picture did not follow that of pituitary involvement—one would expect to find changes in thyroid action, such as hypoactivity, or a



hypogonadal activity. There is no evidence of either in this case.

As to the etiology of primary adrenal insufficiency, it is believed that approximately 50 per cent of cases are due to tuberculosis and 50 per cent are due to unknown causes. Occasionally neoplasm, amyloidosis, or hemochromatosis might cause atrophy of the adrenal cortex.

I believe it probable that this patient may have had tuberculous involvement. The x-rays are not too suggestive of it. No skin test was reported. Bronchial washings were done but were negative. This patient did have a small nodule which was palpated in the epididymus, which might have been a small tuberculoma. There was a nodular mass involving the vocal cord. One might think that this was tuberculoma.

My final diagnosis would be Addison's disease.

As to the terminal event—after bronchoscopy was done this patient developed, supposedly, pulmonary edema. He was treated intensively and seemed to improve rapidly. A few days later, severe pain developed in the right chest. One would think of a pulmonary embolus.

As to myocardial infarct—after looking through the electrocardiograms, I'm still not sure that that was the diagnosis. However, one would think of it because of the nature of the pain.

This patient might have had an organizing pneumonia during that time. The fact that his fever and white count were not elevated would not mean too much in this case; these patients have very poor resistance and poor defense mechanisms in general.

As to the terminal event, I assume that ventricular fibrillation followed the paroxysmal ventricular tachycardia.

#### CLINICAL DISCUSSION

Dr. Delp: At this point we seem to be reasonably agreed that the patient had Addison's disease. We still must determine whether or not he did have a myocardial infarct. There does not seem to be agreement that he died of a ventricular tachycardia or ventricular fibrillation.

We need to answer whether or not the disease itself, if it was Addison's disease, predisposed to any of these terminal situations. Dr. Bolinger, will you comment on any of these questions that you wish?

Dr. Robert E. Bolinger (medicine): I find it difficult from the information given here to diagnose Addison's disease. I do not think the laboratory tests support the diagnosis of Addison's disease. We do not know whether or not he was in congestive failure at the time the Kepler-Power test was run, and that would, of course, throw it off. The eosinophiles also were out of line, and so were the 17-ketosteroids.

I realize that detecting Addison's disease is frequently confusing—it sometimes comes out to the necessity of running a therapeutic test. I do not know what kind of therapy was given, so that's of little help. I cannot make a diagnosis of Addison's disease from the information we have here.

As to the terminal episode, I suspect that he had Addison's disease and had been treated with desoxycorticosterone—I don't know that he was. That predisposes, I think, to a cardiovascular type of demise. It would predispose to the development of pulmonary edema. I think, as far as the terminal series of events go, that probably this patient had a myocardial infarction, possibly an anterior septal infarct following surgery, and death from then on was as has been discussed.

Dr. Delp: Our laboratory evidence did not seem to establish the diagnosis and I had extracted from the history the fact that after this patient was dismissed from the hospital a year and a half ago he was placed on desoxycorticosterone, first by parenteral injection and subsequently by pellet implantation. It does seem that for a time the patient did rather well on that medication.

Dr. Bolinger: Some pellet influence going on at this time or an unknown amount of desoxycorticosterone effect certainly would predispose to the pulmonary edema this patient had.

Dr. M. G. Berry (medicine): If this patient had congestive failure, if it was not due to desoxycorticosterone, he certainly had a paradoxical type of disease that would be difficult to treat, because of the tendency of the desoxycorticosterone in a case of Addison's disease to defeat the very thing you try to accomplish in the treatment of congestive heart failure.

I do not know the cause of this patient's death. There are many possible causes of death following bronchoscopy. The fact of the matter is that bronchoscopy is not a simple procedure. A little leak of air out into the chest is a possibility here, although I suppose some of those films were taken after the bronchoscopy. Furthermore, I am not trying to promote Dr. Hayman's "crunching sounds," but there still is an outside possibility of an emphysema. Many things can happen other than a myocardial infarct.

Dr. Delp: Dr. Dimond, there must be more information in the electrocardiograms than has been brought out. Do you have any comments about this?

Dr. E. Grey Dimond (medicine): My only contact with these EKG's was that dim view we saw. The thing that impressed me was the increasing degree of left axis deviation; that could indicate left heart failure.

One EKG showed a marked RST segmental deviation in  $V_2$  and  $V_3$ , though from here I could not see an R wave. It looked to me like they all went

right across. That is ample evidence of myocardial infarct.

You could notice, just after the last ventricular complex, a P wave, then a little pause, then the P

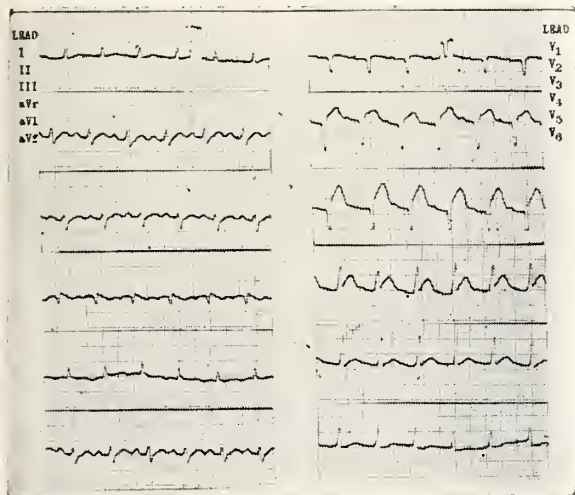


Figure 1. EKG taken on 10th day, showing sinus tachycardia, marked elevation S-T segments in V1, 2, 3, and V4, and depressed S-T segments in V6, suggesting anterior myocardial ischemia. This tracing shows no evidence of pulmonary infarction.

wave finally recapturing the AV rhythm, followed by sinoauricular rhythm.

Just as a final thought, this patient died of left heart failure, died with left heart disease and myocardial infarct, ventricular tachycardia, and ventricular fibrillation. I think Dr. Berry's point is very good, though, that this may have been a case of mediastinal emphysema.

Dr. Delp: Do you have any remarks, Dr. Rankin?

Dr. Thomas J. Rankin (medicine): At one point in the terminal picture, before his cardiac difficulties, he had something which resembled an upper mediastinal syndrome. So I feel that a carcinoma (which I cannot locate), possibly in the upper respiratory system or possibly in the mediastinal glands, could be a part of this picture.

Neither can I feel certain that an infarct necessarily was part of the terminal picture. It is a little hard for me to accept a patient who had pain which was attributed to infarct, in whom a loud friction rub was heard almost at the moment of the onset of that pain. So I wonder if the patient possibly had a pulmonary infarct adjacent to the pericardium, with a contiguous pericarditis from the pulmonary infarct, with the same subsequent train of events following through from there.

Dr. Delp: Perhaps this patient had an infarct several days before the friction rub was heard. I don't think we can disprove that.

# PATHOLOGY REPORT

Dr. J. David Robertson (pathology): At autopsy this was an extremely emaciated individual. Body length was estimated at about 5 feet, 10 inches and weight 100 pounds or less. The lungs showed a few apical scars, some atelectasis of the left lower lobe, and were somewhat edematous but otherwise not remarkable. The mediastinum was negative.

The heart showed an area of fibrinous exudation over the apex and a notable thinning of the wall of the myocardium over this region, about the size of a silver dollar. The wall was thinned to 4 mm. in this involved area. The anterior portion of the septum was discolored with areas of hemorrhage and reddish brown discoloration. There was also a silver patch over the right side of the left ventricle. The anterior descending branch of the left coronary artery contained a thrombus about 2 cm. from the ostium. The thrombus was several millimeters long.

The spleen contained a large area of infarction of a yellowish brown color. The branch of the renal artery going to this portion of the spleen contained a thrombus.

The thyroid contained a small mucinous cyst on the left. The adrenals were of about normal size. The cortex was somewhat thin. The testes were of normal weight; one of them weighed 5 grams less

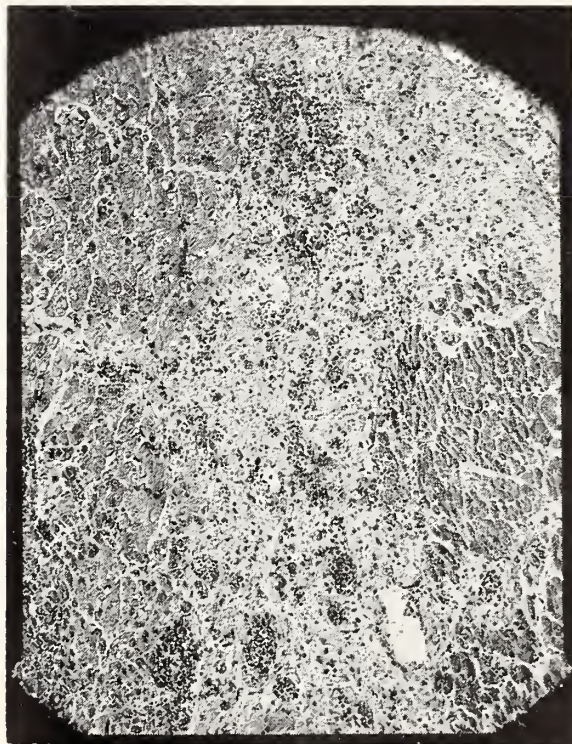


Figure 2. Acute myocardial infarction with necrosis of myocardial fibers on the right and less degenerated vacuolated fibers on the left. In the center there is a junctional zone showing loss of muscle and displacement by edema, congestion and hemorrhage with minimal inflammatory infiltration.



than the other. The basilar artery showed a moderate degree of arteriosclerosis. There was an area of softening in the left parietal-occipital cortex, about a centimeter or so in diameter. There were petechial hemorrhages throughout this region.

Dr. H. I. Firminger (pathology): There was in the heart an area of infarction, a fairly recent infarct with a thrombotic occlusion of the coronary artery to account for it. Microscopic section of the coronary showed that it was filled with a thrombus with early organization which totally occluded that vessel. There were also in the heart areas of fibrosis, one of which was large enough to make us feel that there was an older infarct there also. There was a fairly diffuse fibrosis in the myocardium.

The lungs showed some pneumonia with a few polymorphonuclear leukocytes in the focal areas, with destruction of the alveolar walls in those areas, suggesting an early attempt to form abscesses.

The biopsy taken from the larynx in surgical pathology showed acute and chronic laryngitis. A section taken from the region of the biopsy at the time of autopsy showed lack of re-epithelialization and fibrous tissue beneath.

The section of the adrenal showed that the cortex was definitely abnormal; there should be cords of cells running throughout the length of the cortex. Instead we found scattered islands of cells and a

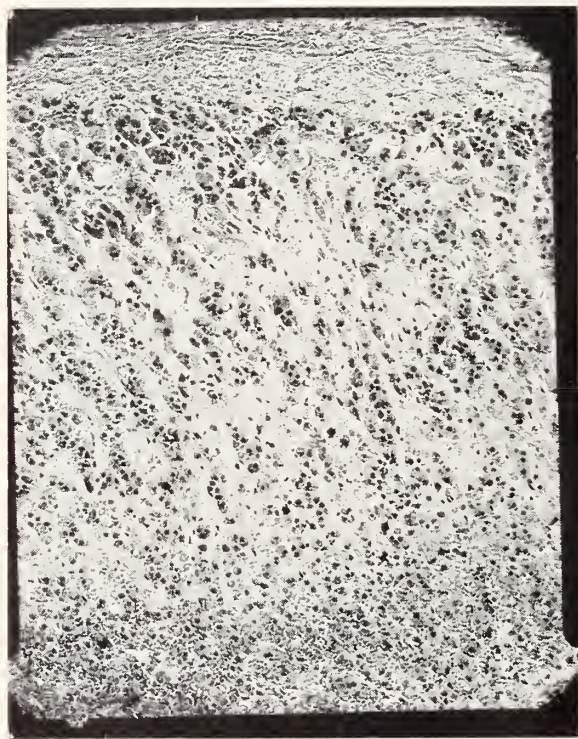


Figure 3. One of the most atrophic areas in the adrenal cortex, showing loss of typical cord-like structure due to dropping out of cells and shrinkage with depletion of lipoid in the remaining cortical cells. The reticular zone (at bottom) is congested and acutely hemorrhagic.

fairly anuclear type of connective tissue stroma. These cells were small and shrunken; there was little lipoid in them. They appeared to be inactive.

A section from a pigmented area of the skin revealed the pigment was due to melanin deposition in the basal layer.

The pituitary grossly was somewhat smaller than normal. Microscopically, I could not see too much wrong with the pituitary except for some increase in interstitial fibrous tissue. There were both eosinophiles and basophiles in this pituitary.

The thyroid was nodular, about normal size, but the nodules varied greatly in their microscopic appearance.

The testes showed an area of focal atrophy which was not surprising considering the age of the patient. The vessels were thickened, as one might expect. Some tubules were not as atrophied as others, in fact did not show very much atrophy. There was a large loss of spermatogenesis, again not surprising. There is a good deal of variation in people of this age in what the testes show.

The prostatic ducts had the changes one would expect. A squamous metaplasia of the prostatic ducts indicated a lack of androgen activity.

#### FINAL ANATOMICAL DIAGNOSIS

##### *Primary:*

Arteriosclerosis of the coronary arteries, moderate, with thrombotic occlusion of the anterior descending branch of the left coronary with beginning organization.

Myocardial infarcts, recent and old.

Focal fibrous thickening of pericardium.

Bronchopneumonia with early abscess formation.

Hydrothorax, left (100 ml.).

Atelectasis, lower lobe left lung and part of lower lobe of right lung.

Acute passive congestion of liver.

Arteriosclerosis of aorta, splenic and renal arteries, slight; cerebral arteries, moderate.

Sclerosis of anterior leaf of mitral valve.

Arteriolar nephrosclerosis, slight.

Thrombotic occlusion of superior branch of splenic artery.

Recent infarct of spleen.

Encephalomalacia, left parietal-occipital area.

Decubital ulcers of skin over sacrum and left buttock.

##### *Accessory:*

High origin of right coronary artery.

Calcified nodules, lower lobes both lungs.

Fibrous thickening of pleura at apices of both lungs.

Partial atrophy, adrenal cortices (history of possible Addison's disease).

Focal fibrosis, pituitary gland.

Nodular goiter.

Focal hyperpigmentation of skin.

Subcutaneous pellets in left posterior chest wall (history of implantation of DOCA pellets).

Focal atrophy, both testicles (history of orchitis 52 and 37 years ago).

Squamous metaplasia of prostatic ducts.

Nodular hyperplasia of prostate.

Chronic inflammation and fibrosis, right vocal cord.

Solitary retention cyst of right kidney.

Absence of appendix and healed right anterior abdominal wound (history of appendectomy 35 years ago).

#### DISCUSSION

Dr. H. I. Firminger: By and large Addison's disease is due to one of two things: idiopathic type of atrophy of the adrenal cortex or tuberculosis. There are other causes but these are the chief ones. It used to be thought that tuberculosis accounted for most of the cases. However, in recent years, increasing numbers of cases of idiopathic atrophy are being reported and seen. Whether it actually is increasing or whether our attention is being called to it, I do not know. We do not know the causes of atrophy of the adrenal cortex. All proposed explanations have not been satisfactory.

Changes seen in the adrenals in Addison's disease may involve the medulla, but the cortex apparently is mainly involved. In earlier literature you will find considerable disagreement as to whether the cortex or the medulla was important.

Atrophy of the adrenal cortex produces a number of changes in body function. There is regulation of the electrolytes by the adrenal cortex. Sodium and chloride are important. If one loses sodium chloride, one also loses the water which it holds, and a decrease in plasma volume results. Because of this, blood pressure tends to be down with a consequent reduction in renal function. The relationship of sodium and potassium is disturbed in adrenal cortical deficiency, with an increase in potassium as well as a fall in sodium.

In addition, the adrenal cortex is important in the formation of glucose, protein, and the proper utilization of fats. Hypoglycemia thus occurs in these cases with a tendency to hypoglycemic shock and sensitivity to insulin. Some decrease in androgen production may occur because some adrenal cortical substances show androgenic activity. Immunity reactions apparently are disturbed; I think it is clearer today that the adrenal cortex is important in antibody production and the adrenal cortical extracts do have effects on lymphocytes and other antibody forming cells. Also, there is a disturbance in pigment metabolism which is not well understood.

Many things in this case do not go along with a

clear cut diagnosis of Addison's disease. This adrenal showed an unusual amount of cortex for Addison's disease. I think that may account for the fact that there were more ketosteroids in the urine than would be expected and that the evidences of Addison's disease were not too pronounced.

As for the relationship of Addison's disease to the myocardial condition, other reports have cautioned about the necessity of care in starting these patients on desoxycorticosterone acetate. Thorne originally advised that one take at least four weeks to establish a minimum dosage and give only aqueous extracts before starting to give pellets, because you are apt to rehydrate the patient quickly, produce pulmonary edema, produce myocardial insufficiency, and so on. So I feel that it is a possibility in this case that the desoxycorticosterone actually was important in the terminal event.

On the other hand, due to the chronic changes in the myocardium, I cannot help feeling that this patient really had some diseases which were antagonistic, as Dr. Berry suggested. This patient had an arteriosclerotic disease which was affecting the myocardium primarily, with a concomitant adrenal insufficiency, whether you want to call it Addison's disease or not. Desoxycorticosterone acetate antagonizes the myocardial condition. That probably took place to some extent in this case.

If I were to reconstruct this case, I would do it this way: This patient had evidences of adrenal insufficiency since before his first hospital admission. He probably had also a certain amount of myocardial insufficiency due to arteriosclerosis and previous infarctions and focal fibrosis in the myocardium. He was treated successfully with desoxycorticosterone and got along well, but his heart was failing. He showed evidences of the antagonism, perhaps, between the desoxycorticosterone and his myocardium which perhaps contributed to pulmonary edema. Then he came in to KUMC with an incidental sort of thing—acute and chronic laryngitis. Either as a result of the laryngeal biopsy or coincident with it, he developed something which most people have ignored—he became irrational and almost stuporous on the day following the surgery, and then was in a semicomatose state. I think this is accounted for by the encephalomalacia which we found in the left parietal-occipital lobe, which I presume to be embolic or perhaps thrombotic, in addition to the arteriosclerosis of the cerebral vessels. This area of softening was entirely compatible with a course of approximately three weeks.

Subsequently, he recovered from this, and then he developed a thrombosis in the coronary artery, with acute myocardial infarction, which was more than he could stand, and death occurred from the myocardial infarction.



Dr. Delp: Any final questions?

Dr. Jenkins: In regard to this patient's state of confusion, I have the clinical impression that it was associated with and at least partially attributable to the congestive failure—that is, that when the myocardial output improved following the use of digitalis, the patient's sensorium cleared markedly. It is my feeling that cerebral anoxia or hypoxia would produce the cerebral symptoms as much as any small lesion that might have been found in the brain at postmortem. That merely happened to be a residuum of the hypoxia.

#### SUMMARY

Dr. Delp: There are many instructive features in this case. If this man did have Addison's disease, it is of some interest that we had to make the diagnosis upon the signs and symptoms physically rather than upon the laboratory evidence. We can say in the next breath, "Your laboratory survey at the time he was in here previously was not as complete as it should have been." That's granted—I do not think that it was.

Collectively, we commonly think of patients with Addison's disease as dying in an acute cortical insufficiency. That is a common terminal event. Dr. Firminger has pointed out that desoxycorticosterone is a dangerous substance when administered to any patient, and especially to patients who already have evidence of heart disease.

It is reasonably certain that this man was in congestive failure on arrival. Had this been recognized immediately, the terminus might have been somewhat different.

And lastly, if we really did think that he needed cortical extract or cortisone, he should have been getting much larger doses. He was receiving token doses. He could never have been brought out of crisis with such doses.

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2. Thorn, G. W.: Treatment of Addison's disease (therapeutic symposium), *J. Clin. Endoc.* 1:76-86, 1941.
3. Thorn, G. W. et al: Advances in the diagnosis and treatment of adrenal insufficiency, *Am. J. Med.* 10:595-611, (May) 1951.

Red Cross blood collection last year reached an unprecedented total of 4,186,000 pints. To meet all blood requirements, civilian and defense, the Red Cross must collect over 4,700,000 pints in the 1952-1953 fiscal year.

The United States Department of Agriculture reports that for every four persons sitting down to a meal in 1950 there will be a fifth person in 1975.

## ACTIVITIES OF MEMBERS

Dr. Ralph J. Metcalf, El Dorado, spoke on "New Drugs" at a recent meeting of the El Dorado Nurses' Alumnae Association.

Dr. and Mrs. A. R. Chambers, Iola, are spending two months in Europe. They will attend the coronation of Queen Elizabeth in England and a meeting of Rotary International in Paris and will also visit in Italy and Switzerland.

Dr. Orville R. Clark, Topeka, spoke on cancer before a public meeting in Burlingame recently under the sponsorship of the Burlingame Business and Professional Women's Club.

Dr. Niles M. Stout, Lyndon, has been appointed health officer of Osage County, succeeding the late Dr. C. W. Beasley.

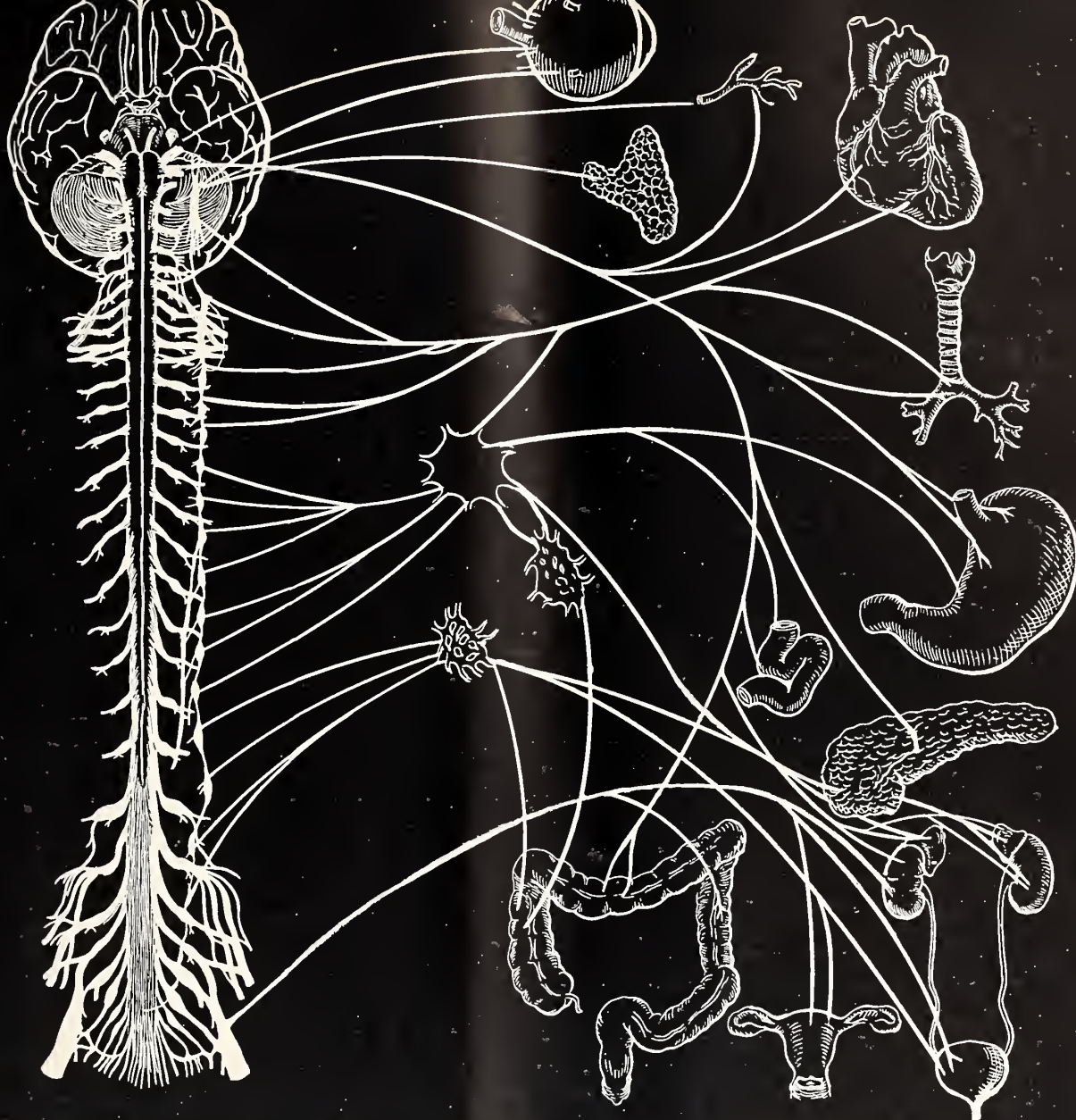
Dr. Howard C. Clark, Wichita, spoke on "The 50th Anniversary of the Sedgwick County Medical Society" at a recent meeting of medical assistants in Wichita.

Dr. D. L. Richardson, Minneola, spent two weeks in Chicago last month attending a postgraduate course in surgery at the Cook County Graduate School of Medicine.

Dr. Ballard Hayworth, Topeka Medical Center, reported for active duty with the Navy at San Diego last month. Dr. Hayworth recently became a diplomate of the American Board of Internal Medicine.

Dr. W. F. Bernstorff, Winfield, addressed a recent meeting of the Sixth District Registered Nurses' Association at Arkansas City. His talk was based on the nurses' program for a 14-state area which includes Kansas.

Dr. C. J. Kurth, Wichita, was recently elected vice-president of the Mid-Continent Psychiatric Society, an affiliate of the American Psychiatric Association, for the 1953-1954 year. He will be president-elect of the organization in the 1954-1955 period.



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Dr. William R. Durkee, Manhattan, has successfully completed examinations given by the American Board of Internal Medicine and is now a diplomate of that board.

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Dr. William C. Menninger, Topeka, received the fifth annual achievement award of Cornell University Medical College. He was presented the award at a meeting held in New York City in April, and the subject of his address there was "Psychiatry and the Practice of Medicine."

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Dr. Carl O. Tompkins, who formerly practiced in Hillsboro, is now practicing in Newton in association with Dr. Lee S. Fent and Dr. D. S. Klassen.

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Dr. Robert Y. Jones, who has practiced medicine for 46 years, in Hutchinson since 1909, announced his retirement last month.

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Dr. V. M. Winkle, of the Kansas State Board of Health, was named president-elect of the Middle States Public Health Association at a meeting held in Topeka in April. Dr. Thomas R. Hood, executive secretary of the Kansas State Board of Health, was chosen as president-elect of the Kansas Public Health Association at the same meeting.

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Dr. M. R. Fitzpatrick, who has practiced in Kansas City since 1948, has been called to active duty with the Army. He reported to Fort Lewis, Washington, and was assigned to the medical corps with the rank of captain.

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Dr. A. E. Bair, who recently returned from service with the Army in Germany, is now associated in practice with Dr. J. G. Hughbanks, Independence.

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Dr. Edwin R. Maier has returned to practice at the Arkansas City Medical and Surgical Clinic after spending 21 months in orthopedic surgery at Lackland Air Force Base, San Antonio.

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Dr. Frank E. Hoecker, Lawrence, and Dr. Homer L. Hiebert, Topeka, were authors of a paper, "Clinical Applications of Radioactive Isotopes in Small Hospitals," published originally in the JOURNAL last June, which was abstracted in the May, 1953, issue of *Radiology*.

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Dr. C. W. Zugg, Great Bend, was principal speaker at a community celebration in Claflin last month honoring Dr. Herbert W. Jury, who has completed 50 years of practice there. The Barton County Medical Society presented a gold watch to Dr. Jury.

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Dr. E. M. Seydell, Wichita, was made a senior councilor of the American Board of Otolaryngology at a meeting held in New Orleans recently.

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Dr. John F. Coyle, Coffeyville, has been called to active duty with the air force, effective June 8. He reported for duty at Montgomery, Alabama.

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Dr. James J. Basham, Eureka, discussed plans for a proposed hospital for Greenwood County at a meeting of the county advisory committee late in April.

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Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was one of the speakers at the 95th annual meeting of the Missouri State Medical Association, held in Kansas City last month. He described the Kansas rural health program.

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Dr. Robert K. Purves, Wichita, was notified recently that he had successfully completed examinations given by the American Board of Surgery. He is now in military service and is stationed at Forbes Air Force Base, Topeka.

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Dr. Eugene Myers, Iola, addressed the Business and Professional Women's Club there recently on the subject of multiple sclerosis.

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Dr. N. C. McCubbin, Concordia, has opened an office in Clyde and will practice there each morning.

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Dr. M. F. Stock, formerly on the staff at the state hospital at Osawatomie, has opened an office in Weir. The Boosters Club of Weir sponsored an open house on May 8 as a welcome to the new physician.

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Taking part in a public meeting at Emporia on May 16, under the sponsorship of the Kansas Heart Association, were Dr. Clarence Erickson, Pittsburg; Dr. Don C. Wakeman, Topeka; Dr. John M. Porter,

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Concordia; Dr. Harold H. Jones, Winfield, and Dr. Lee H. Leger, Kansas City. Dr. Philip W. Morgan, Emporia, is president of the group.

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Dr. George R. Lockett, who has been practicing in Glasco, moved to Moline last month and has opened an office there.

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Dr. George Hopson, who has practiced in Liberal for 18 months, is now practicing in Plains, where he has taken over the Collingwood Clinic, formerly operated by Dr. William H. Burch who is now in military service.

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Three members of the Sedgwick County Medical Society took part in a Career Conference sponsored by high schools in Wichita last month. Dr. C. T. Hagan spoke at St. Mary's High School, Dr. Howard C. Clark addressed two classes at North High School, and Dr. Robert H. Maxwell spoke at East High School.

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Dr. Arnold F. Nothnagel, Kansas City, spoke on "Surgery" before the Kiwanis Club of Kansas City at a recent meeting held at the Town House.

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Dr. Lucien R. Pyle, Topeka; Dr. C. F. Taylor, Norton; Dr. Ralph I. Canuteson, Lawrence, and Dr. George Jackson, Topeka, have been appointed to an advisory board to meet with a special legislative committee charged with the responsibility of choosing a location for a new Southeast Kansas tuberculosis hospital.

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Dr. Clarence H. Benage, Pittsburg, was one of the speakers at a banquet held in that city recently in celebration of the 50th anniversary of Mt. Carmel Hospital.

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Dr. Jack V. Sharp, Arkansas City, was chosen president of the newly organized Medical Veterans' Society of Cowley County. Dr. George L. Norris, Winfield, is vice-president, and Dr. Thomas L. Hill, Arkansas City, is secretary-treasurer.

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In 1952, 37,600 Americans were killed in traffic accidents, and 2,090,000 were injured.

## SURVEY OF PUBLIC RELATIONS PROJECTS

A survey of public relations projects carried on by state and county medical organizations, made by the A.M.A.'s Department of Public Relations since the first of the year, indicates that progress has been made in many directions since January, 1951.

Seventy-four per cent of the state societies, and 83 per cent of the county groups, now have night and emergency call systems. All states have mediation committees, and 71 per cent of the counties have such groups. Work in the field of press, radio, and television relations is now undertaken by 91 per cent of the state societies and 77 per cent of the county units.

An average of 79 per cent of all county societies and 81 per cent of state societies took part in detection drives and allied health campaigns; nearly 70 per cent of both groups report they participated in other civic projects. For example, 85 per cent lent a hand to civil defense activities.

In the field of health education, 77 per cent of all county societies and 89 per cent of state societies have been active, distributing literature, maintaining speakers' bureaus, holding forums or public meetings, and placing medical exhibits at fairs and celebrations.

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## FILM AVAILABLE TO GROUPS

A new black and white film, "And the Earth Shall Give Back Life," is available for group showings through E. R. Squibb and Sons, 745 Fifth Avenue, New York 22, New York. Filmed by Louis deRochemont, the picture tells the story of antibiotics, with emphasis on discovery and production. This 16 mm. film, with sound track, runs 25 minutes.

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## NEW FORMAT FOR LILLY BULLETIN

An entirely new format for the Eli Lilly and Company publication, *The Physician's Bulletin*, made its appearance recently. It is now published in "pocket-book" size with 32 instead of 24 pages, and is issued 10 times a year instead of every other month. Brevity is the keynote of the booklet. It is now being sent to 150,000 doctors in this country.

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Streptomycin and PAS are not bacteriocidal but bacteriostatic. They do not cure or eradicate the disease (tuberculosis). Relapses occur and reconversion of sputum from negative to positive is frequent. They have markedly improved the prognosis of tuberculosis but have not controlled it.—*John H. Skavlem, M.D., West Virginia Medical Journal, December, 1952.*

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# Steroid Hormones in Geriatrics: A Review\*

Fount K. Hartley, Senior Student  
University of Kansas School of Medicine

The normal process of aging entails many gradual changes within physical and mental spheres. Several of these changes are visible ones; however, they have basic origins which lie nearer to the body's dynamic regulating mechanism. Steroid hormonal changes during the process of aging are being investigated extensively at present. From the fields on endocrinology and gerontology has come new thought regarding the aging phenomenon. This paper represents an attempt at reviewing some late work with steroid hormones in geriatrics. In this discussion, we will cover the endocrinological and histological patterns during aging, some of the mechanisms which bring about aging and the pathological processes associated with senescence, and some possible corrective measures, with summary and conclusions.

## ENDOCRINOLOGICAL AND HISTOLOGICAL PATTERNS DURING AGING

The aging process is correlated with a slow withdrawal of some vital hormones from the system. Normally, during youth, the body enjoys a nice balance between the internal secretions. When one begins to age, the balance is upset because some glands decrease in secretion, other glands exhibit compensatory overproduction, and still others produce an abnormal secretion.

Age heralds some disease entities which are due to maladaptation to new hormonal relationships. Human beings show subjective signs during these maladjustment periods. Men show lack of energy, moderate mental depression, and a reduced sexual activity. Women exhibit a reduced estrogen supply by experiencing hot flashes, tiredness, mental depression, and nervousness. These symptoms, especially in the female, are thought to be due to a marked shift in the stability of the autonomic nervous system. Although these symptoms usually run parallel to the increased gonadotropin level, they do not necessarily do so and are perhaps better thought of as a manifestation of estrogen deficiency.

Aging is brought about by a combination of histological changes in the glands with a concomitant reduction in glandular function. Histologically, there

is a general collagenous replacement of the functional parenchyma. In the gonads, there is a thinning of the epithelium and of smooth muscle, giving support to the idea that aging is slow castration. The pituitary reveals vacuolation of basophilic elements, an increase of reticular fibers around sinusoidal capillaries, and a decrease in structural eosinophils. These changes are reversible by the administration of testosterone and estrogen.

Estrogen in small dosages stimulates the eosinophil production and increases the leutenizing hormone level. If the estrogen is in very large dosages, all gonadotrophic hormone is suppressed. In the adrenal gland, the collagenous change is highest in the zona reticularis and lowest in the zona fascicularis. Changes in the fascicular and glomerulosa zones have been found to be partially reversible in female rats by the administration of estrogen, progesterone, and androsterones.

The thyroid does not produce a known steroid hormone, but its activity in the hormonal system demands mention. Age change in the thyroid is one of diminished follicle size with atrophy of the epithelium, partially reversible by the use of sex hormones. Hashinger believes that thyroid function definitely decreases with aging and that the keen estimation of the clinician is still the most accurate measurement of function. The fascicular zone of the adrenal cortex is closely related to the thyroid. Lowered adrenal function and hypothyroidism is called the Schmidt syndrome. A "slowing" thyroid, if responsive to good adrenal activity, develops hyperthyroidism.

There are many known steroid hormones at present. It is obviously impossible to discuss all of them completely, so we will deal only with the ones which seem most important, namely, androgens, estrogens, and adrenal corticoids. The androgens have their origins in the interstitial cells of the testes and the adrenal cortex. The estrogens come from the ovaries, adrenal cortex, and the Sertoli cells of the testes. The corticoids are from the adrenal cortex and are found in both males and females in varying amounts.

In human beings the excretion of 17-ketosteroids is a fair measure of androgen production. This statement is supported by the high and low excretion of 17-ketos in adrenal cortical tumors and Addison's disease, respectively. Both androgenic and non-androgenic 17-ketos are gradually reduced with advancing years. The following graph explains why

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.



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\*Glass, S. J., and Rosenblum, G.: J. Clin. Endocrinol.  
3:95 (Feb.) 1943.

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men don't have a true climacterium. It represents a gradual withdrawal of the hormone.

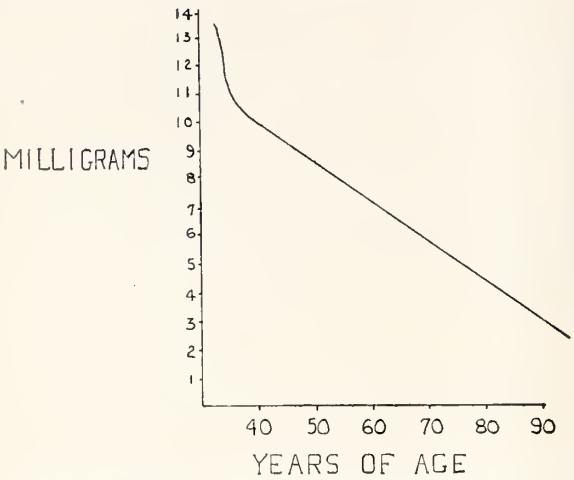


Figure 1. Neutral 17-ketosteroid comparisons of the 24-hour urine excretions of men of various ages (From Kirk, Journal of Gerontology, Volume 6, July 1951).

Androgen decreases in women also, which probably reflects a slowing down of adrenal cortical function. Men have a peak of 17-keto excretion at 25 years of age. Aged men show a mean ketosteroid excretion approximately 40 per cent of young adult males, while aged women will excrete 60 per cent of the amount of younger women. Among the younger groups, females excrete 55 per cent of the amount of males. In the aged group, women excrete 80 per cent the amount of males. The proportionate decline of androgen and androgen-like functions during aging is found to be greater in males. No correlation between ketosteroid excretion and body weight of habitus could be found, except for an anticipated decrease in excretion in subjects 15 per cent or more below ideal weight.

Estrogen values fall sharply from a high level during the reproductive period of life to a low level during the menopause. In men the excretion is nearly stable.

TABLE 1.  
THE 24 HOUR URINARY EXCRETION OF ESTROGENS  
IN 237 MEN AND 253 WOMEN

Age	Total Estrogen MEN	Rat Units/24 hr. WOMEN
17-29	11.7	38.2
30-39	13.8	38.9
40-49	12.3	21.3
50-59	13.7	10.8
60-69	12.5	6.7
70-79	12.4	7.3
80-96	10.5	6.7

(From Kirk, Journal of Gerontology, Volume 6, July 1951.)

It is believed that the primary fault of sex hormones in regard to their failure lies in the paren-

chyma of the target organs, e.g. testes and ovaries, because there is a demonstrable overproduction of gonadotrophin from the pituitary. However, aging also affects pituitary function. Solomon and Shock showed that after epinephrine injection there is a significantly greater eosinopenia in young than in older persons. No difference in eosinophil count was noted after ACTH administration. It was concluded from these studies that the adrenal cortex is responsive to ACTH, is not remarkably impaired in senescence, and that the pituitary's response to epinephrine is moderately reduced in the aged. It is widely observed that old persons do not respond to acute stress as do younger individuals. Either less ACTH is put out by the pituitary, or there is primary degeneration of all body tissues producing functional changes independent of the degree of hormonal stimulation. At all ages, the lability of the pituitary-adrenal system indicates that pituitary hormones and adrenal hormones are both rapidly released and consumed.

It has been mentioned that a balance of hormonal activity is necessary for normal body function. Androgen/estrogen ratio studies have produced interesting observations.

TABLE 2.  
THE ANDROGEN/ESTROGEN RATIO IN 204 MEN OF  
VARIOUS AGES

Age	Androgen/Estrogen Ratio*
17-29	13.9
30-39	10.9
40-49	7.0
50-59	6.4
60-69	6.9
70-79	2.6
80-96	

(From Kirk, Journal of Gerontology, Volume 6, July 1951.)

This graph shows that in men the ratio is gradually decreased with age. This leads to certain feminization of male organs which are sensitive to increased estrogen stimulation. Prostatic hypertrophy of advancing years is believed to be due to stimulation of the lateral lobe. This lobe is under regulation of both male and female hormones, i.e. an ambisexual receptor. Gynecomastia is frequently seen in older men.

The following statements apply to the pre-climacteric and are basic fundamentals of hormonal activity.

1. Estrogen serves as a regulator for the production and release of pituitary gonadotrophin. Large estrogen doses suppress all gonadotrophic activity, small doses increase follicle stimulating hormones (fsh), and still smaller amounts stimulate the leutenizing hormone (Lh). Thus, we see how there



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is a shift from the ovary to the adrenal gland for hormonal sustenance.

2. Estrogens stimulate the formation of ACTH while androgens suppress it, as shown by the hypertrophy of the adrenal gland cortex in male castrates. During the normal sex life, the large amount of estrogen suppresses Lh, which lowers the sex-linked steroid production by the adrenal zona reticularis. The high estrogen level stimulates ACTH to produce 11-oxys, or glucocorticoids, which are instrumental in maintaining youthful appearance and function.

Estrogen also has a synergistic effect upon somatotrophins in control of mineralocorticoids, their formation, and release. In connective tissue, for example, the injury responses of the glucorticoids and the mineralocorticoids are a combination of complementary and opposing factors. The mineralocorticoids seem to be the "hormones of defense" and the glucorticoids the "hormones of healing." The former hormone favors the deposition of hyalin, and the latter favors the removal of hyalin. Normally, the three layers of the adrenal cortex are stimulated in a balanced manner, and the influence on the target gland is therefore a healthy one. Waning gonadal activity appears to initiate alterations in other glandular activity.

It has been stated that there is a sharp reduction of estrogen during the menopause. This is generally true, although symptoms may not always parallel the diminution. There is a bleeding threshold in the uterus and, although other subjective signs of menopause are evident, this threshold may be reached and bleeding may continue. There is a close association between the ovary and the uterus, and the function of one is clearly reflected in the other. When one removes the uterus, 40 per cent of women undergo a decline in ovarian function within a 6 to 18 month period.

During the menopause the estrogen supply is low and the gonadotrophin (chiefly fsh) is high. However, there is generally enough circulating estrogen to stimulate the adrenal zona reticularis to produce estrogen and androgen-like materials. This idea has been substantiated by a temporary increase in 17-ketosteroid excretion postmenopausally, although the general trend is downward. Thus, the loss of anabolic or anti-catabolic effects of sex hormones is compensated in part by the supplement of the adrenal cortex which has been called "the gonad of the aged."

#### SOME OF THE MECHANISMS WHICH BRING ABOUT AGING AND THE PATHOLOGICAL PROCESSES ASSOCIATED WITH SENESCENCE

It has been learned that once past middle life, an

individual partially shifts his sex hormone supply to the adrenal cortex. He will either adapt in the usual way, exhibiting normal aging attributes, or suffer a maladaptation with ostensible pathologic reactions.

A workable explanation of the aging process has been offered by Selye in his "adaptation syndrome." The sequence of events in the syndrome can be amplified as follows: the large amount of "sugar" hormone which is produced by the adrenal cortex as a result of stress inhibits the "nitrogen" and the "desoxycorticosterone-like" hormones; this prevents the systemic accumulation of protoplasm and of extracellular fluid. When the excess production of the "sugar" hormone ceases and the inhibitive action disappears, the "nitrogen" and the "desoxy" hormones are produced in increased amounts, which stimulates the systemic anabolism of protoplasm and the re-establishment of electrolytes and water balance during the period of convalescence.

The concept of the "adaptation syndrome" provides another addition to the homeostatic mechanisms which are set in motion in an effort to maintain the optimal condition in the individual. It is apparent that there are conditions in which this homeostatic mechanism does not function properly. Thus, there has been developed the concept of "diseases of adaptation." These diseases may involve defective or abnormal interrelationships between the central nervous system, the anterior pituitary gland, the adrenal cortex, and the body tissues.

The disturbance in adaptation may be manifested during the stage of the "alarm reaction," the "catabolic," or "anabolic" phases, in regard to aging. In these diseases of adaptation, Selye has summarized evidence connecting certain cases of cardiovascular disease and arthritis with an overproduction of mineralocorticoids. It will be remembered that these mineralocorticoids (desoxycorticosterones) are relatively out of control of the anterior pituitary. These hormones are generally the chief offenders. Their relative autonomy is borne out by the fact that electrolyte balance is not greatly disturbed in cases of panhypopituitarism.

Selye used 15 subjects (both men and women) with symptoms which first appeared during or after the climacterium. In subjects with the hypertrophic form of arthritis, 77 per cent showed an abnormal response to ingestion of desoxycorticosterone-acetate and salt, 50 per cent showed a lowered basal metabolic rate, 25 per cent exhibited a low level of 17-ketosteroid excretion, but there were no changes in 11-oxysteroids. In patients with hypertension, 80 per cent exhibited an abnormal response to ingestion of salt and DOCA, constituting the only change in these patients.

It has been shown that the cardiovascular system

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is sensitive to deprivation of sex hormones, especially estrogen. Some patients develop hypertension, i.e. cardiomegaly, coronary changes, and kidney disease. Capillary fragility is present, and the vessels are labile, contracting and dilating with minor degrees of excitement producing flushes and sweats. The electrocardiograph shows irritative changes in the myocardium. Many of these changes are reversible by estrogen therapy.

These studies reveal an overproduction or at least an imbalance of mineralocorticoids and other controlling hormones. In patients who presented findings of diabetes mellitus, Achard-Thiers syndrome (i.e. hypertension, hirsutism, diabetes mellitus, and obesity—all at the menopause), and osteoporosis, the findings are those of a mild Cushing's syndrome. All these symptoms result from too much glucocorticoid and too little mineralocorticoid. There is evidence of overproduction of 11-oxy or glucocorticoid hormone in 61 per cent of the patients tested.

Other diseases exist which are generally associated with the aging process. One of these is carcinoma of the prostate. It has been shown that the posterior lobe is chiefly under the control of the male hormone and that the middle and lateral lobes are ambisexually stimulated. There is degeneration of the cells of carcinoma of the prostate with large doses of estrogen. Both nodular hyperplasia (ambisexually stimulated) and carcinoma (posterior lobe) occur at a time when the androgen and estrogen levels of the body fluids are decreasing. These new growths are extremely rare in castrated men.

The suppressive effects of testosterone on carcinoma of the breast and cervix and the suppressive effects of estrogens on metastasizing carcinoma of the prostate are widely known adjuncts of modern therapy. The sequence of events for the pathologic physiology of "diseases of adaptation," if correct, would provide an explanation for the beneficial effects of the administration of ACTH or the "sugar" hormone (Cortisone), since these agents would bring about an inhibition of the production of the "desoxycorticosterone-like" hormone and would induce a progression of the disease through the "catabolic" phase into the convalescent or "anabolic" stage with ultimate recovery.

The demonstration in some of the "diseases of adaptation" that the adrenal cortex is normally responsive to ACTH and that the pituitary is normally responsive to epinephrine with the production of ACTH (although sometimes delayed), favors the interpretation that the locus of the "block" or "resistance" in these diseases is between the site of local injury and the central nervous system.

#### SOME CORRECTIVE MEASURES

One of the leading journals of gerontology has as

its motto, "To add life to years not years to life." This is the aim of every person who administers replacement therapy and corrective hormones to the aging. There obviously is a metabolic process of aging during the menopause (or adrenopause). This process is due to the withdrawal of both "male" and "female" hormones which are essential for normal metabolic activity in both sexes. These are not "sex hormones," in a literal sense, because they have action on protein and nitrogen metabolism, electrolyte and water balance, mineralization of bone, and cardiovascular and nervous function.

The lack of response of an organ to steroid hormone stimulation is due to the fact that the hormone has no specific effect on that organ or that there is a loss of ability to respond (on account of age changes) to an otherwise normal stimulus. Of course, one must assume that the hormone is produced in sufficient amounts, which is usually not the case.

Steroid therapy can usually be divided into the effects on (1) the generative organs and secondary sex characteristics, and (2) the action on the non-generative organs. In administering androgens one notices an improvement in sexual function (potency), possibly from an improved tone and development of the ischiocavernosus and bulbocavernosus muscles. There is an atrophy of these muscles in castrated rats. It has been observed, in giving androgen for the male menopause, that much larger amounts of androgens are required to inhibit fsh than estrogen. Some therapists give estrogens to inhibit fsh, and then androgen in addition to enable the patient to have erections. On this therapy the patients seem considerably improved.

The effect of testosterone on the secondary male characteristics, e.g. the beard, shows a definite increase in old, castrated, and hypogonadic men.

Among the changes of the non-regenerative organs from testosterone administered is nitrogen retention with increased protein synthesis and weight gain which exhibits the anabolic and antiaging effects of androgens. A weight gain of 8 to 10 pounds over a 4 to 8 week period was seen in emaciated men past 70 years of age. There was usually an increase by performance tests. This beneficial effect, however, disappeared within a few weeks following withdrawal. This demonstrates the hormonal effects on aging but is discouraging as a treatment for combating aging.

Goldzieher believes the climacterium in both sexes to be primarily a metabolic disorder dependent upon a decrease in steroid hormone secretion. This concept is upheld by the fact that characteristic clinical symptoms sooner or later subside spontaneously in both sexes. However, without arresting the meta-

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bolic disorder, the senescent process continues apace. He believes that testosterone corrects the climacteric symptoms but allows the metabolic disorder to proceed. Finally, the testosterone loses its potency due to continued repression on androgens secretion in the adrenal cortex. Goldzieher opines that a potent cortical extract seems to be most helpful in maintaining a continued response to testosterone therapy.

The female menopause is more precipitous than the male and therefore generally more severe. There has been a great deal of investigation concerning replacement and substitution therapy with steroid hormones. Besides many subjective findings, several objective signs are exhibited postmenopausally. There is a gradual decrease in the thickness of the skin and the size and tone of the muscles; the vaginal mucosa atrophies; the endometrium and breasts show regressive changes, and there is a decrease in bone matrix formation by the osteoblasts. The condition of osteoporosis is a troubling consequence of aging which manifests itself generally in a matter of five or six years after the menopause, at which time a clinical degree of disability has developed, e.g. a collapsed vertebra or a fractured hip.

Many ideas of the disease mechanism have been offered. Allbright believes that one of the consequences of increased protein breakdown may be a reduction in the amount of organic matrix with a resulting osteoporosis, not a disorder of calcification. Following estrogen or androgen therapy, an increased amount of organic bone matrix is laid down, osteoblasts proliferate, and then calcification occurs. To bear out the concept of the inability of an organ to respond to a stimulus it is cited that young hypogonadic men show an increase in acid phosphatase when on testosterone therapy. This is evidenced by an increased acid phosphatase in young men and no response in old men.

In providing therapy for postmenopausal women, it has been necessary to perform tests on many facets of the problem of aging, e.g. the effects on skin, uterus, and the psyche. It appears that the older age groups (64 to 82 years) proved to be more interesting than the younger ones because the process of aging had been at work longer and the reversal of the process was more noticeable. Goldzieher showed that within six weeks after the application of an ointment containing 1 mgm. of estradiol per ounce, there resulted a striking increase in the number of surface layers of epithelium and epidermal pegs. In the cutis there were increased capillaries and decreased fragmentation of the collagen fibers, coupled with an increase in elastic fibrils. Estrogen application in both men and women was followed by a significant improvement in skin resiliency of an estimated 15 years rejuvenation.

The injection of estrogen (1 to 3 mgms. weekly) can provoke uterine bleeding in senile women either by intermittent withdrawal of estrogen or by supplementing progesterone administration. The uterine wall becomes succulent and receives many newly developed arteries.

Kountz made observations from autopsied uterine arteries in women of the same age with similar gynecological histories. Some of these women had received replacement therapy for as long as six years, while others had received no therapy. There was a lessening of the arteriosclerotic process in the treated women, suggesting that causes of arteriosclerosis may be a reduction of the physiological activity of the organs. During estrogen therapy, the vaginal epithelium becomes cornified and cyclic accumulations of glycogen occur, which corrects much vaginitis, pruritis, kraurosis, and dermatitis. The breasts also show an increase of glandular tissue.

There are no convincing statistics that estrogens administered to old patients increases the incidence of neoplastic disease; in fact, there is some evidence that some of the forms of neoplastic disease in older women respond favorably to estrogen therapy.

A fact which has caused much optimism was discovered from experiments on the non-generative organs. It was found that nasal mucous membrane was restored to its youthful ciliated, columnar epithelium. There were more nasal glands and augmented vascularization of mucosa and submucosa. Since atrophic changes have been demonstrated as being capable of restoration, there is a possibility that other organs may be made to respond if the adequate stimulus can be developed.

The pancreas exhibits old age changes by some diabetic flare-ups. It is likely that psychic changes are responsible for most latent diabetes postmenopausally. Estrogens have alleviated the diabetic conditions. Arthritic flare-ups are partially attributed to lowered pain threshold and partially to the usual increase in weight.

Interesting results have been obtained by Caldwell and Watson studying a chief problem of the aging person, namely that of his changing psychological attitude. Thirty aged women (mean age 75.17 years) were selected for a study designed to investigate the psychologic effects of female sex hormones. Half of the patients received hormones (estrogen and progesterone) controlled in such a way as to induce cyclic bleeding, while the other half received injections of mineral oil. Psychologic testing was performed before the hormone therapy was begun and again after six months of administration.

These tests were chosen to sample functions on general intelligence, memory, energy level, degree of optimism, of pessimism, initiative, flexibility of

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thought processes, environmental interests and activity, contact with reality, and motivation. Results show improvement in ability to think and expend intellectual energy. Memory seems definitely enhanced, particularly with respect to meaningful material. There was no general shift toward a more favorable attitude toward other people. Hormonal therapy is not a panacea for all the mental ills and infirmities of old age, but the results are distinctly provocative.

The treatment of the menopause consists of medical therapy, psychotherapy, and hormonal therapy. Hormonal replacements, sedatives, and reassurance that the menopause is not pathologic within itself constitute the most effective array of present treatments.

The rate of hormonal absorption is important because hormones are destroyed by the liver if not taken up by the tissues within a certain length of time. This fact makes it necessary that the patient have an individualized dose. One may use several different regimens in administering estrogens. Three ways are suggested: 1. Estrone 1 mgm. intramuscularly 2 to 3 times weekly, supplemented by stilbesterol 0.25-1.25 mgm. daily during the second week, then oral therapy alone (stilbesterol). 2. The oral route immediately, 0.25 mgm. stilbesterol daily, doubled weekly until a therapeutic response is obtained. 3. Estradiol benzoate or propionate 1 mgm. weekly until there is a response, then at lengthening intervals.

Any untoward effects of overstimulation by estrogen, e.g. sore breasts or uterine bleeding, can be alleviated by decreasing the dosage and giving testosterone 25 mgm. intramuscularly until symptoms subside. In order to stimulate the normal hormonal cycle, the hormone is given for 20 days, then interrupted for approximately 5 days. If the women is having periodic menses, it is well to give the hormone for a period of 20 days beginning on the day after the period ceases. In older women who have stopped menstruating, the apprehension which would result from a return of the menses can be largely nullified by preparing the patient with a preceding explanation of the procedure.

Testosterone may be given as the propionate intramuscularly, 5 to 25 mgm. every 2 or 3 days, until improvement occurs, at which time the dosage should be gradually reduced to maintenance levels of 10 mgm. of methyl testosterone 1 to 3 times daily as the sublingual or oral tablet. For menopausal therapy, the dosage is approximately 25 mgm. intramuscularly every 1 to 2 weeks.

Such a beneficial and benign procedure as replacement therapy is not without certain deficiencies: 1. No actual increase in longevity is reported. 2. All

senile deficiencies are not affected alike, thus the uneven restitution may even endanger the condition of the patient. For example, testosterone may increase strength and activity to a point sufficient to precipitate a cerebral or cardiac accident. However, at present the danger seems minimal in comparison to the beneficial effects of steroid hormonal therapy.

#### SUMMARY AND CONCLUSIONS

1. An attempt to give an endocrinological and histological picture of the aging process has been made.
2. Some of the mechanisms of aging are discussed with emphasis on the diseases of adaptation.
3. The effects of replacement therapy with steroid hormones have been enumerated.
4. The loss of the sex hormones from the gonads during aging is partially compensated for by the supplement of the adrenal cortex which has been called the "gonad of the aged."
5. Restoration and rejuvenation of tissue has been induced by the administration of replacement hormonal therapy.
6. Better methods of appraisal of the type of imbalance are needed. For example, in the secretion of the various layers of the adrenal cortex, if one could determine the state of balance between the glucocorticoids and the mineralocorticoids more readily, the correct type and amount of balancing supplement could be given. This would aid in forestalling or checking the existing disease of adaptation.
7. Each patient needs an individualized dose of hormone to meet his specific demands.
8. There is believed to be a primary degeneration of all body tissues producing functional changes independent of the degree of hormonal stimulation.
9. The fact that in some individuals the pituitary-adrenal system is found to be intact, yet diseases of adaptation develop, favors the interpretation that the locus of these diseases is between the site of local injury and the central nervous system.
10. The process of aging seems to be a metabolic disorder which requires more correction than the mere correction of subjective symptoms of old age.
11. Hormonal therapy is not a short-term therapy. It is extended and requires careful regulation.
12. Steroid hormone therapy definitely adds life to years and should be given to all old persons suffering from the diseases and distress of old age. There is evidence of better mental and physical health with the important extended years of usefulness to a world encumbered by the growing load of an aging, non-productive population.

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More than 6,000,000 hospital patients received Blue Cross hospital service benefits during 1952, according to a recent report. This means that nearly one person in seven covered by the plan was hospitalized during the year. This compares with a ratio of one in 10 just a few years ago.

Good public relations for the medical profession begins in the office of an individual physician.

## BOOK REVIEW

*Operating Room Technique. Edited by Sisters of St. Francis, St. Mary's Hospital, Rochester, Minnesota. Published by W. B. Saunders Company. 345 pages, 219 illustrations.*

This book gives a detailed description of the instruments and procedures for a wide variety of operations in all specialties except ophthalmology and otolaryngology.

The book is inadequate in the presentation of methods and technic in sterilization of instruments and linens. There is no discussion of a clean-up routine following contaminated cases. The value of the book lies chiefly in the detailed operative procedures and description of operations.—M. C. B.

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## KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

Volume LIV

JULY, 1953

No. 7

### The Practitioner, the Surgeon and Acute Abdominal Disease\*

R. L. Sanders, M.D.

Memphis, Tennessee

Recently, in looking through some old medical journals, I found the following statements: "The condition of the average general practitioner is far from encouraging. . . . Various causes are blamed—sanitation and prophylaxis. The trend of the profession toward organization has made medicine a sordid business. The enormous extension of surgery has frightened people. . . . Few will deny that specialism in medicine has been carried too far." The article containing these statements was written in 1909, 44 years ago!

Almost 20 years later, in 1926, another author had this to say: "In thinking of such changes in medicine, of the general practitioner representing one extreme, and a sane one, and the highly trained specialist representing the other . . . I believe that with the help of time an adjustment will be made. . . . The balanced mind, the trained and thoughtful mind . . . does not become excited or unbalanced at such changes in experience. . . . It sees such things in the long view and knows that with the help of time an adjustment will be reached."

To the younger men of our profession it may seem strange that the general practitioner was already facing the problem of specialization in the early part of the century. If one looks back over the years, however, and considers the changes which have gradually been brought about, and especially within the past few years, he can appreciate the wisdom in the second quotation, that extremes are transitory and, with the help of time, adjustments will be reached.

In the first place, the present situation of the

average general practitioner is most encouraging. The prevention of disease has become a significant part of the general practitioner's field of endeavor and, in fact, almost his field alone. As for the trend toward organization in medicine, instead of making medicine "a sordid business," organization has proved a powerful force for scientific progress.

Nor does the enormous extension of surgery any longer frighten people. Most major operations 44 years ago were followed by a mortality of 50 per cent or more. Far more extensive procedures today carry a mortality of 5 per cent or less.

In view of its present scope, one is amazed at the thought that specialism had been carried too far in 1909. We have found that specialism is an inevitable process as more and more is discovered about the origins and treatment of disease. The significant fact is that general practice has come to be a specialty itself.

It now appears that we are in process of completing the adjustment. We have become aware of the need of a coordination of all the specialties in order to provide the best in medical and surgical practice. We realize that without this coordination, each specialty becomes so insular as to lose much of its effectiveness. In particular, it is recognized that all the specialties must be coordinated with general medicine, and toward this end, better training in medicine is a first requisite. As a consequence, our schools are providing postgraduate training in general medicine, special organizations are functioning for a similar purpose, and several specialty boards are requiring evidence of general knowledge in medicine before they will certify a candidate.

\* Presented at the 94th annual session, Kansas Medical Society, May 4-7, 1953.



It is a source of much gratification to me that former lines of divergence are becoming lines of convergence. In my field of practice, abdominal surgery, we are often dependent upon the general practitioner for the recognition of surgical diseases and not infrequently must call upon him for assistance in the preoperative and postoperative care of patients. Meetings such as this afford an excellent opportunity for promoting this coordination of effort, in that they provide a medium for exchanging experiences and getting together in matters of mutual concern.

In no situation is it so necessary for the general practitioner and the surgeon to combine their efforts as in the care of the patient with an acute abdomen. This condition requires a diagnostic acumen of the first order, as well as the soundest judgment in weighing the indications and the most opportune time for surgical treatment. With these thoughts in mind, it is my purpose to discuss some of the acute abdominal diseases in which the general practitioner and the surgeon are most often called upon to work in cooperation.

#### ACUTE APPENDICITIS

Despite our familiarity with acute appendicitis, too often operation is still delayed too long. On the other hand, it must be agreed that too many normal appendices are being removed. The latter fact is due, in the first place, to an incomplete history and inadequate findings. In the second place, it is due to anxiety and urgency on the part of the family, and in the third place, to fear on the part of the physician that an error in judgment may have disastrous results.

Every physician sees both the typical and atypical types of acute appendicitis. In general, the attack is initiated by epigastric pain, followed by nausea and vomiting, and later by localization of the pain in the right lower quadrant. There are, however, many variations from this syndrome. It has been my observation that the patient usually complains of a feeling of distress, with gaseous distention in the mid-abdomen, especially about the umbilicus. Frequently, the patient states that the sensation is not unlike acute indigestion, or the distress which follows the ingestion of some food which disagrees. In addition, the patient has a sense of "stoppage" or complete cessation of intestinal function. Or, if the appendix lies in the pelvis, diarrhea may be associated.

In the early hours of the attack, an elevation of temperature is uncommon, and the patient does not appear ill. If the attack is severe, however, the patient may be prostrated from the beginning.

The leucocyte count is not always reliable as a diagnostic feature. It may rise to a high level in some cases and in others may remain within normal limits. The clinical picture provides the best criterion for the diagnosis.

On physical examination, tenderness is elicited over the site of the appendix. If the appendix lies high, behind the cecum, tenderness will be elicited in the flank. A tender area in the pelvis on digital examination suggests a low-lying appendix. Rebound tenderness is a significant sign.

It is axiomatic that removal of the appendix is indicated as soon as the diagnosis is made. A McBurney incision is the approach of choice, and in the ultimate will be followed by a lower mortality. The matter of drainage will depend upon whether or not perforation has taken place.

Mesenteric adenitis in children is frequently confused with acute appendicitis. It has been my privilege to see many children with this condition in collaboration with my pediatric confrères. Mesenteric adenitis may be suspected if the general appearance of the child suggests insufficient nourishment, and a history of poor appetite, constipation, and irregular attacks of cramping abdominal pain is obtained. The initial attack is rarely identical to that of acute appendicitis and, as a rule, is not severe.

Obviously, it is impossible to make a positive diagnosis in all cases of mesenteric adenitis, though if the possibility of such a condition is kept in mind, many of these children may be spared an unnecessary operation. If the appendix is removed, the diagnosis may be confirmed by excision of an inflamed mesenteric gland for pathologic study. Following operation, adequate treatment, including an ample diet containing fruit juices, together with cod liver oil and heliotherapy, will cause the condition to subside.

#### ACUTE CHOLECYSTITIS

Acute cholecystitis may be provoked either by strangulation and edema of the ducts from a chemical reaction or infection, or, more likely, by obstruction of the cystic duct by a stone. In the differential diagnosis, one must often consider a perforated peptic ulcer, an acutely inflamed, high-lying retrocecal appendix, acute pancreatitis, and coronary disease. A history of previous symptoms of cholecystitis and the roentgen demonstration of a non-functioning gall-bladder will assist in establishing the diagnosis.

The acute seizure is characterized by pain in the upper right abdomen or epigastrium, with radiation to the back. One must distinguish between an ordinary gallstone attack, which subsides spontaneously, and an acute process which may run an entirely different course. For this reason, the patient must be kept under close observation. If the pain is relieved after a few hours and other symptoms begin to subside under medical management, operation may be deferred. We have found that in the cases which require surgery, three features are outstanding: (1) sustained pain with exacerbations every few hours

over a period of 24 to 48 hours; (2) a palpable, tender mass in the right upper quadrant; and (3) a systemic reaction characterized by an elevation of the temperature and leucocyte count. In the presence of these findings, immediate operation is indicated.

It is our belief that most patients with acute cholecystitis should be operated upon as soon as the diagnosis is determined, just as in acute appendicitis. The surgical mortality is low and recovery is prompt.

#### ACUTE PERFORATION OF PEPTIC ULCER

The picture of a perforated peptic ulcer is typical and can hardly fail to be recognized. Pain is the outstanding feature and, as a rule, is sudden in onset and prostrating in intensity. The patient lies immobile and resents any movement or examination. In most cases, shock is surprisingly absent. The patient is usually pale and perspiring, and his appearance is out of proportion to the pulse and blood pressure, which are approximately normal during the early hours of the attack. A board-like rigidity of the abdomen is characteristic and in itself is almost diagnostic. Nausea and vomiting are seldom associated. As a rule, a plain film of the abdomen demonstrates the presence of air beneath the diaphragm.

In some cases, the perforation will be protected and the symptoms will subside spontaneously. If the pain persists for a few hours, however, surgical intervention is imperative, as the mortality increases in proportion to the number of hours which elapse between the perforation and the time of operation. Our own experience has proved this point. During the past 10 years we have operated upon 41 patients with acutely perforating duodenal ulcers. Five of the group died postoperatively—a mortality of 12 per cent. The significant fact is that three of the five had perforations of three days duration or longer.

We have had no experience with the conservative management of acutely perforating peptic ulcers, as advocated by the English. It seems a little dangerous to use the Levine tube with suction in the hope that the perforation will close spontaneously and the intraperitoneal fluid will be absorbed.

In general, it is our custom to do no more than close the perforation at operation. The immediate necessity of saving the patient's life is the primary consideration. The ultimate result is secondary, even though a large number of these patients may be expected to require a second operation. At present, however, there is a definite trend toward primary resection in these cases when the condition of the patient permits.

#### ACUTE INTESTINAL OBSTRUCTION

The answer to the question of immediate surgical intervention in intestinal obstruction hinges upon a

distinction between simple mechanical obstruction and imminent or actual strangulation. In the latter, the decision is urgent. Without surgery, the strangulation leads sooner or later to gangrene, perforation, and peritonitis.

Adhesive bands and angulation of the small intestine by adhesions are by far the most common causes of the obstruction. Hernias, intussusceptions, volvulus, tumors, and other conditions are together responsible for less than half the cases. In the vast majority, the site of the obstruction is the ileum, and it is here that strangulation is most likely.

*Simple Mechanical Obstruction.* The patient with a simple mechanical obstruction may not appear acutely ill, and the pulse, respiration, temperature, blood pressure, and leucocyte count may be little, if any, altered from the normal. Recognition of the condition should be relatively easy by the colicky pain, vomiting, and abdominal distention. Vomiting is likely to be profuse, particularly if the obstruction is high. The distention varies in degree; often, it is apparent only upon examination. An audible and visible peristalsis is frequently associated. Some rigidity may be present, but no tenderness. If the obstruction is produced by a tumor or by intussusception, the mass may be detected by palpation. A low abdominal mass may be found on rectal or vaginal examination.

*Strangulation Obstruction.* In every case of suspected intestinal obstruction, the patient should be kept under the closest observation. As the blood supply of the intestine becomes damaged, the obstructive symptoms and signs grow more pronounced and the patient appears acutely ill. The colic increases in severity, and between the attacks the patient experiences constant pain of a lesser degree. The vomiting becomes more violent and, if the obstruction is low, may be fecal in type. The distention likewise increases and is accompanied by further resistance of the abdominal muscles and more or less tenderness. A palpable mass will often be detected. The temperature and leucocyte count rise and, unless the patient has received ample fluids, evidences of marked dehydration are observed. These signs will be recognized as those of early strangulation and are surgical in their implications.

In some cases, this sequence of events takes place within a few hours, the signs of strangulation appearing almost from the beginning of the attack. In others, several days may elapse before the crucial stage manifests itself. The questions for the physician to ask himself are: (1) does an obstruction exist and, (2) if so, is it mechanical or strangulating? Physical examination, repeated often, should provide the answers. Roentgenograms are useful for demonstrating the location and type of the obstruction. These, also,



should be repeated at intervals to determine the degree of distention and whether or not the obstruction is increasing.

The use of the indwelling tube with suction for acute intestinal obstruction should not be prolonged. Often, this procedure gives one a false sense of security. Unless definite relief is soon apparent, surgery is the safest course.

In the presence of a mechanical obstruction, operation is directed toward removal of the cause. If adhesions are responsible, release of the adhesive bands is sufficient. In the strangulated group, also, early removal of the cause may preclude the necessity for resection. In either type, if the bowel is definitely damaged, resection may be required.

Acute abdominal disease demands the most alert observation to determine the diagnosis and whether or not operation is indicated. If indicated, the earlier the procedure is undertaken, the better. In other cases,

constant watchfulness to determine what course the process will follow is imperative. If the pain and other symptoms do not begin to subside within 12 to 24 hours, operation should be performed without further delay. The high mortality following operations for acute abdominal diseases is attributable largely to postponement of surgery until the process becomes irreversible. The general practitioner and the surgeon share the responsibility for the outcome in these cases.

In closing, I wish to express my personal appreciation of the general practitioners and their position in the profession. By the very nature of their specialty, they must have a considerable knowledge of all the branches of medicine. In my surgical career of more than 35 years, I have found that my confrères in general work have fulfilled their difficult position as the cornerstone of medicine in a manner which reflects the highest credit upon themselves. I hope I am as close to their hearts as they are to mine.

## Iliac Bone Used as Barrel Stave Grafts for Non-Unions: Report of Eighty-One Cases

H. O. Anderson, M.D.\*

Wichita, Kansas

Non-union of long bone fractures has always been a problem to the general practitioner, general surgeon, and orthopedist. There are many reported methods of treating this problem; most common are the use of inlay, onlay, sliding, and ribbon grafts, all of which use tibial bone alone or a combination of tibial and cancellous. Most of these procedures require removal of bone from a functioning tibia. In 81 cases to be reported, only iliac bone was used as the osteogenic factor. Our primary objective in using ilium was to preserve the function of a good leg, thus not prolonging the hospitalization required for the graft. There is a distinct economic advantage, for the patient, in maintaining the function of the good leg.

Those who have done bone grafts know that complications can occur at the donor site of the tibia, varying from fracture to persistent pain and a feeling of weakness and instability. To appreciate the osteogenic vigor of cancellous bone, one needs only to note the infrequency of non-unions in fracture of cancellous bones. Lawson Dick, Wing Commander

of the Royal Air Force, has the following to say about cancellous bone.

"A transplanted tissue can continue to live only if it can derive nourishment from the bed into which it is transplanted. It therefore follows that the

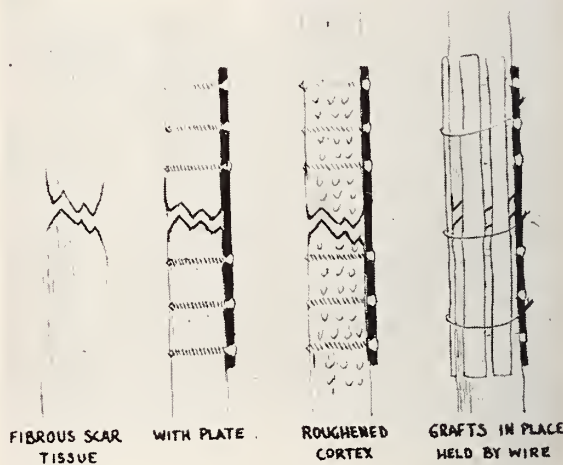


Figure 1

\* Department of Orthopedics, Wichita Clinic, Wichita, Kansas.

## DONOR SITE FROM ILIUM

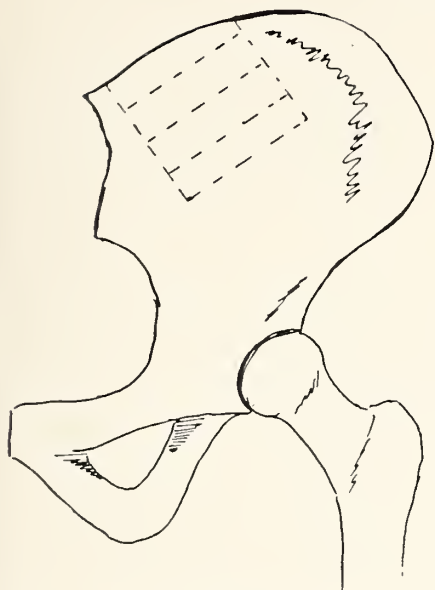


Figure 2

abundant bone cells in small pieces of cancellous bone, readily accessible to the ingrowing vascular buds, are more likely to live and grow in their new surroundings than the scanty cells of dense cortical bone. Compare, for example, how split-skin grafts thrive as free transplants, while grafts of whole-thickness skin need much more careful handling."

The non-unions in our cases were primarily referrals, and they resulted from all forms of treatment which included closed and open reduction, external and internal fixation, traction and pins above and below the fracture site. No attempt will be made to explain the cause of non-unions except to say they do exist, did exist, and will exist.

Our cases were declared to be non-union after a minimum immobilization period of four to five months. There was x-ray and clinical evidence to substantiate a diagnosis of non-union, including sclerosis about the bone ends, rounding off of the fracture site, and absence of callous in the x-ray, and frank motion on manipulation through the fracture site.

Eighty-one cases were treated by the barrel stave type of graft, using autogenous iliac bone obtained from the wing of the ilium. The grafts consisted of the outer cortex of the ilium with the subjacent layer of cancellous bone in strips two to three inches in length and one-fourth inch in width. Usually the fracture was first stabilized by fixation with an adequate stainless steel plate and screws or an intramedullary nail. In several cases the fibrous tissue between the bone ends was sufficiently firm that no stabilization was necessary. The cortex, proximally and distally, was then denuded and roughened in its entire circumference to provide a bleeding bed for the application of the grafts. These iliac bone strips, removed by the second member of the team, were placed parallel with the bone, crossing the fracture site, and held in place by wire, catgut suture, or at times, Parham bands.

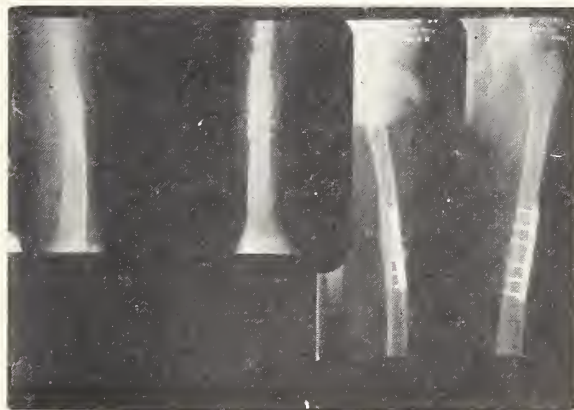
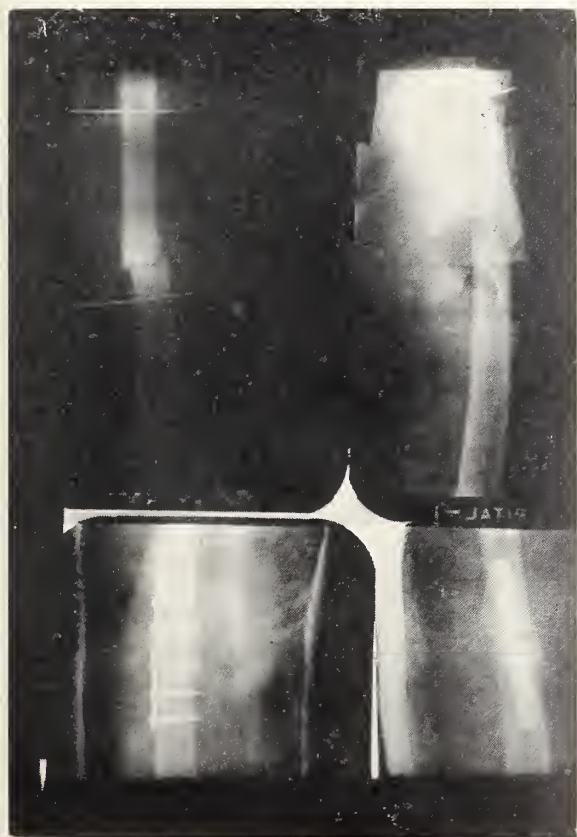


Figure 3A and 3B. X-rays of a 15-year-old boy with a non-union of the femur, three months after insertion of the pins. Pins are above and below fracture site. Successive pictures show graft in place and union in nine weeks.



Iliac grafts of this length and this thickness are flexible and can easily be brought into close approximation with the denuded cortex. The scar tissue between the fragments, in most instances, was not disturbed; however, if it was removed to realign the fragments properly, the interval was packed with cancellous bone removed from the medullary cavity of the ilium before the application of the strips. Casts were applied in all grafts of the forearm and tibia, incorporating the joint above and below the surgical site. Femurs with an intramedullary nail had no external fixation. The humerus was usually immobilized by strapping to the chest wall. Figure 1 is a schematic diagram showing the progressive steps in the application of the strips for barrel stave grafts.

The average length of time for clinical union of the barrel stave type of graft was four and one-half months postoperative. This applied to all the long bones, namely, the tibia, femur, humerus, and the bones of the forearm. Several healed as rapidly as two months; others took as long as ten months. X-ray examinations many times showed union before we felt clinically there was enough for active function. We depended more upon the clinical evidence than we did upon the x-ray.

A further break-down of these cases showed the average healing period of the 22 femurs in this series to be five months. There was one operative failure due to absorption of the graft, and it was repeated successfully. There were 23 cases of non-union of the shaft of the tibia, one of which resulted in a failure at three months because of insufficient callous, and this was repeated successfully. The average healing period was five and one-half months. The repeated bone grafts in the femur and tibia with the second operation were not considered as new cases.

There were 31 cases of non-union in the forearm. The average healing period was four months. There were two cases of non-union at the end of six months

and they, as yet, have not been repeated. There were five cases of non-union in the humerus, and the average healing period was three months.

The criteria of healing period was a variable factor in our series. For the lower extremities, it was based on the time from surgery to removal of the cast and beginning weight bearing. In the arm, it was figured from the time of surgery to the removal of the cast and limited function. There was a period of several weeks when a graft may have been solid, but we were overly cautious in prolonging the immobilization.

Other comparable series of bone grafts using tibial bone, such as those reported by Harkins and Phemister,<sup>6</sup> were with the same high percentage in healing and with comparable time elements. We, therefore, do not feel we have anything to offer in reducing the time required for union by using iliac grafts. Our series also compares quite similarly with those reported by others<sup>2, 7, 9</sup> in percentage of union obtained. Our objective, however, has been accomplished; we did not incapacitate our patients further by using a good leg for the donor site.

There were four failures in the 81 cases. Two of these failures were corrected successfully with the second bone graft. The other two failures are still to be repeated at this time. Ninety-five and seven hundredths per cent (95.07%) of this series were successful with one operation. The average hospital stay was between seven and ten days for grafts of the upper extremity. The hospitalization for the tibia and femur grafts was longer and varied with factors unrelated to the surgery. There was little residual pain in the ilium and it did not prevent ambulation, when the grafted area permitted, in a single instance. By the use of the iliac bone, we entirely eliminate the possibility of future complications in a good leg. The operation is no more diffi-

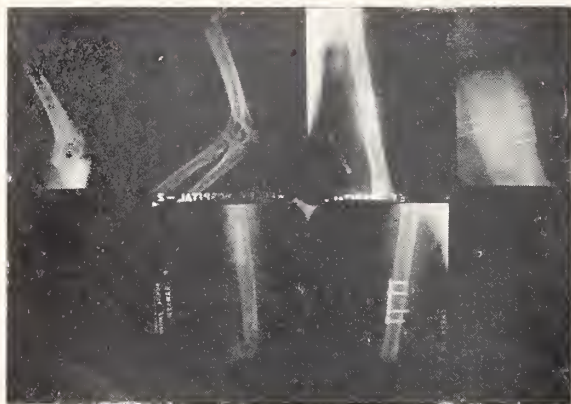


Figure 4. X-rays of a 30-year-old woman with a non-union of the humerus two and one-half months after closed reduction. Successive x-rays show grafts in place and healing in two months.

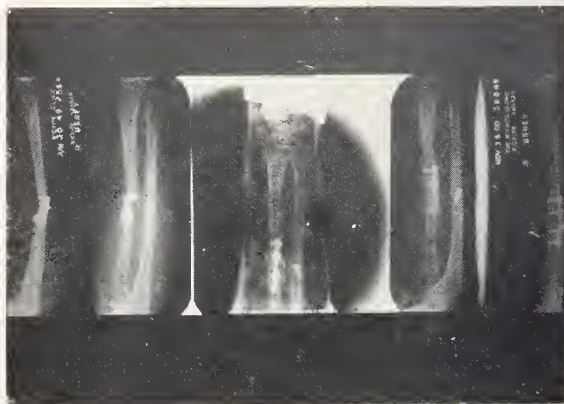


Figure 5. X-rays of a 43-year-old woman with a non-union of the radius three months after open reduction. Graft in place and union in two and one-half months (the x-ray dates showing a three and one-half month interval may be confusing, but actual function was started two and one-half months following surgery).

cult to perform than for any other type of bone graft, and it heals with as much assurance or more than in any other procedure which we have used in the past.

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## Ketosteroids in Coronary Heart Disease

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The experience gained by Massachusetts General Hospital Cardiac Department over a period of 15 years from two separate studies has shown that coronary heart disease under the age of 40 is 24 times as common in males as in females.<sup>1, 2, 3</sup> This observation raised the question of the role of male hormones in the etiology of coronary heart disease. This question is reinforced by the observations that females past the menopause are more prone to coronary heart disease,<sup>4</sup> and male castrates are believed to show a lower incidence of the disease in contrast to non-castrate males in comparable age groups.<sup>5</sup> It was on this basis that the Coronary Research Project entered a study of the excretion of urinary ketosteroids.

Urinary ketosteroids contain androgenic material which, prior to Zimmerman's technique, were determined by biological assay methods. The chemical measurement of urinary ketosteroids by the Zimmerman technique (with modifications by Callow et al.,<sup>6</sup> Dobriner et al.,<sup>7</sup> and Talbot<sup>8</sup>) depends upon the red color formation, in the presence of alkali and metadinitrobenzene, by the active methylene group—CH<sub>2</sub>CO on position 17 of the steroid nucleus. It should be pointed out that not all androgens are chromogenic, and similarly not all chromogenic material is androgenic biologically. Callow et al.<sup>6</sup> and Fraser et al.<sup>9</sup> believe that chemical measurement of the urinary ketosteroids parallels, in many instances, the biological assay methods. Furthermore, these authors prefer the chemical test since it is easily reproducible and may be expedited with greater facility than the biological tests.

The ketosteroids are thought to be an index of the combined activity of the testes and adrenal cortex in the male and an index to the activity of the adrenal

cortex alone in the female.<sup>10</sup> Normal values of ketosteroids excreted in 24-hour urine specimens for males range from 8 to 23 mg. daily (average 14 mg.),<sup>9, 11, 12</sup> and for females from 5 to 14 mg. daily (average 9 mg.). The ketosteroids have been shown to decrease steadily with age<sup>13</sup> and in chronic diseases.<sup>10</sup> There is a transient fall in urinary ketosteroids during acute illnesses.<sup>10</sup>

The purpose of this paper is: (a) to present the findings of an analysis of urinary ketosteroids excretion in 87 young males who had experienced myocardial infarction, (b) to consider the relationship between ketosteroids (androgenic activity) and the etiology of coronary heart disease, and (c) to consider the correlation between ketosteroids and other measurable variables in the coronary disease group.

#### METHOD AND MATERIALS

As part of a larger and more inclusive study, the urinary ketosteroid excretions were studied in 87 males (average age 38.5 years at time of examination) who had experienced a myocardial infarction prior to the age of 40. These men, without exception, had experienced the episode at least 6 months prior to admission to the Massachusetts General Hospital for study and in all cases except five had returned to some form of activity. These men were compared, using the identical technique of ketosteroid assay, to 50 healthy men between the ages of 20 and 40 (average 28 years).

The coronary disease group was hospitalized for study for periods varying from 24 to 72 hours. The ketosteroid determinations were made on extracts from a 24-hour urinary collection in 63 instances, a 48-hour urinary collection in 21 instances, and a 72-hour urinary collection in 3 instances. The usual precautions of acidity and cool atmosphere were

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adhered to. The two groups will be known as (a) the control group and (b) the coronary disease group. Statistical analyses were done according to Lindquist<sup>14</sup> and/or Arkin and Colton.<sup>15</sup>

## RESULTS

### I. VALUES OF 17-KETOSTEROIDS IN CONTROLS AND IN CORONARY HEART DISEASE

The total excretion of the crude neutral fraction as expressed in milligrams of sterone per 24 hours of urinary excretion is summarized in Table 1. Figure 1 shows the distribution curve for the coronary disease group. No attempt was made to separate the ketosteroids into alpha and beta fractions as was done by Hamilton and Hamilton,<sup>13</sup> Dobriner et al.,<sup>7</sup> and Salter et al.<sup>16</sup> There is no significant difference between the means of the coronary disease group and the control group.

The difference between the distribution curves of the two groups is barely significant ( $p = 0.05$ ). The distribution curves differ in two major aspects: (a) there are fewer controls than coronary disease patients at the low range values, and (b) there are fewer patients than controls at the upper range values. It is noteworthy that 17 per cent of the patients with coronary heart disease had a 24-hour urinary 17-ketosteroid excretion of below 6.0 mg. sterone, while only 8 per cent of the control group fell in this range.

TABLE 1  
URINARY KETOSTEROIDS PER 24 HOURS CONTROL  
AND CORONARY DISEASE GROUPS

	Mg. sterone per 24 hours	
	Control Group	Coronary Disease Group
Number	50	87
Range	4.9 — 21.6	2.4 — 21.0
Mean $\pm$ St. Error	11.13 $\pm$ 0.54	10.0 $\pm$ 0.42
Mean Age	28.5	38.5

The absolute increase in ketosteroids in the control group may be explained on an age basis for their mean age is 10 years less than the mean age of the coronary disease group (vide infra).

### II. CORRELATIONS BETWEEN 17-KETOSTEROIDS AND OTHER VARIABLES

It was thought to be of interest to study the change of 17-ketosteroids in relationship with a few of the other variables studied in this investigation, since it has been reported that ketosteroids diminish with age<sup>13</sup> and that body build has a bearing upon the total excretion of urinary 17-ketosteroids.<sup>13</sup>

The correlations between 17-ketosteroids and other variables are listed in Table 2.

The correlations indicate: (a) a negative correlation between age and 17-ketosteroids, (b) no correlation between 17-ketosteroids and body build, (c) no correlations between 17-ketosteroids and lipids, (d)

TABLE 2  
CORRELATIONS BETWEEN 17-KETOSTEROIDS AND  
OTHER VARIABLES IN THE CORONARY  
DISEASE GROUP

Age	-.23 $\pm$ .10*
Height	+.02 $\pm$ .11
Weight	-.04 $\pm$ .11
Ponderal Index	+.15 $\pm$ .11
Endomorphy	-.02 $\pm$ .10
Mesomorphy	-.09 $\pm$ .11
Ectomorphy	-.02 $\pm$ .11
Uric Acid	+.03 $\pm$ .11
Phospholipids	-.08 $\pm$ .14
Cholesterol	+.10 $\pm$ .11
Basal Metabolic Rate	+.19 $\pm$ .11**
Gynandromorphy	-.19 $\pm$ .11**

\* Significant

\*\* Barely significant

a positive correlation between 17-ketosteroids and basal metabolic rate, and (e) a negative correlation between 17-ketosteroids and gynandromorphy.

Because of the suggestions from the correlation data, it was decided to re-examine by other methods the values of urinary 17-ketosteroids excretion in the various decades and in the various physique groupings.

### III. AGE AND 17-KETOSTEROIDS

There has been an agreement in the literature concerning the decrease in excretion of urinary 17-ketosteroids with age in healthy groups. The data reported<sup>13, 17</sup> have not lent themselves to statistical analysis, and no reports are available, to our knowledge, on the relationship of 17-ketosteroids to age in a condition such as coronary heart disease. The results from our study in contrast with Hamilton's<sup>13</sup> and Albright's (control) series are included in Table 3.

TABLE 3  
17-KETOSTEROIDS AND AGE  
(Mg. sterone per 24 hours)

Decade	No.	Hamilton's series	No.	Control group	No.	C.H.D. group
20-29	11	10.8	29	11.7 $\pm$ 0.78	6	11.5 $\pm$ 2.36
30-39	9	10.1	21	10.4 $\pm$ 0.74	49	10.7 $\pm$ 0.57
40-49	11	7.7			32	8.6 $\pm$ 0.56

There is a significant decrease in the 17-ketosteroids within the coronary disease group ( $p = 0.03$ ) with ageing. In the Hamilton series there is an absolute decrease of urinary excretion of 17-ketosteroids with increasing age. These data confirm the impression gained from the correlations.

### IV. PHYSIQUE AND 17-KETOSTEROIDS

Physique was rated according to the somatotype method of Sheldon,<sup>18</sup> thus permitting three physique components to be considered separately. These components are called endomorphy (softness and roundness), mesomorphy (bone and muscle), and ectomorphy (linearity). Each of these three components is given a numerical rating (1-7); accordingly, the values may be employed in calculating correlation coefficients. A complete somatotype profile would consist of ratings in these three variables. Thus, a 3-7-1 would be an individual who possesses three points of

endomorphism, seven points (maximal) of mesomorphism, and one point (minimal) of ectomorphism. He would be considered to be a dominant mesomorph with secondary dominance of endomorphism. Also, for simplification of presentation, a fourfold classification was used:

1. Endomorphs—showing relative preponderance of endomorphism.
2. Mesomorphs—showing relative preponderance of mesomorphism.
3. Ectomorphs—showing relative preponderance of ectomorphism.
4. Mid-Range—showing about equal proportions of three components.

There were insignificant correlations between height, weight, ponderal index, and 17-ketosteroids. In spite of this evidence, it was decided to ascertain the amount of sterone excreted in the urine in 24 hours by each of the dominant physique groups. These results are summarized in Table 4.

TABLE 4  
17-KETOSTEROID AND PHYSIQUE GROUPINGS

Physique	Number	Mg. sterone/24 hrs. urine
Endomorphy	21	$9.9 \pm 0.95$
Mesomorphy	39	$10.6 \pm 0.66$
Ectomorphy	8	$8.9 \pm 1.35$
Mid-Range	19	$9.3 \pm 0.77$

#### V. 17-KETOSTEROIDS, LIPIDS, BASAL METABOLIC RATE

There appeared to be no correlation between sterone excretion and serum cholesterol, uric acid, or phospholipids. The positive correlation between 17-ketosteroids and the basal metabolic rate may be an expression of the anabolic properties of androgens.

#### VI. VALUE OF 17-KETOSTEROIDS IN THOSE INDIVIDUALS IN THE SERIES WHO DIED

There were 8 males (Figure 1) whose demise took place since the onset of this study. Fortunately, 17-ketosteroids were taken in these individuals approxi-

mately 2 to 4 months prior to their deaths. The mean value of 17-ketosteroids in this group was  $7.68 \pm 1.02$ . The difference between this mean and the mean of the total coronary disease group was significant ( $p = 0.01$ ). It was of further interest that half of this group had a sterone excretion of less than 7 mg. per day, 2 to 4 months prior to their demise.

#### DISCUSSION

The finding of normal 17-ketosteroids in the coronary disease group would suggest that the patients (with the exception of 5 members) studied in this series should not be classified as members of a chronic disease group since they are active in some form of gainful employment and they do not show signs of congestive failure. Furthermore, the members of the coronary disease group are at least as active as the prisoners described by Hamilton.<sup>13</sup> Admittedly, during the acute phase of a pathological process, there is a rise in 17-ketosteroid excretion for 24 hours, which decreases rapidly for 4 to 5 days,<sup>10</sup> and then gradually rises to the individual's normal value. However, in chronic diseases such as malignancy, sprue, malnutrition, diabetes, and rheumatic disease, Forbes et al.<sup>10</sup> have shown that there is a decrease in 17-ketosteroid excretion. In 82 chronically ill males the average 17-ketosteroid excretion was 6.2 mg. sterone daily, while in 114 chronically ill females the average 17-ketosteroid excretion was 4.4 mg. daily.

This study concurs with other observations in that there is a slight decrease in 17-ketosteroids with increasing age. As far as we know, there are no complete observations on body build and its relationship to 17-ketosteroids. However, Hamilton states that a preliminary analysis of his data revealed that the more "massive" the individual, the greater the 17-ketosteroid excretion.<sup>19</sup> Hamilton further states that he is not certain whether the increased 17-ketosteroids are a result of increased musculature or whether the increased musculature is a result of the 17-ketosteroids.

Our findings are in accord with Hamilton's observations, but, in some respects, are somewhat more definitive. These data show absolute but insignificant differences of 17-ketosteroid excretion in the mesomorphic (muscular) group in contrast with ectomorphic (linear) group. It is of interest that 17-ketosteroids are inversely related to gynandromorphy, for the greater the gynandromorphy, the greater the accumulation of fatty tissue. This may be an expression of an endomorphic physique. Such observations may help to affirm the contention that 17-ketosteroid excretion is dependent mainly on muscle mass. Hamilton<sup>19</sup> has stated that the level of 17-ketosteroid excretion decreases with true obesity. This would confirm these studies indirectly.

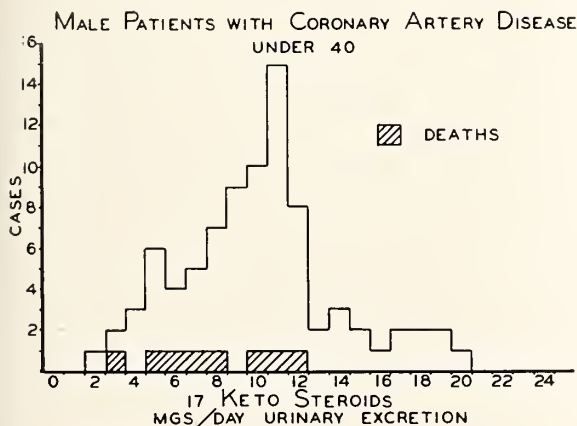


Figure 1.



The positive correlation between 17-ketosteroids and basal metabolic rate would corroborate the anabolic properties of androgens. As thyroid activity increases within certain limits, the anabolic responses of the organism, including androgenic stimulus, would increase. The reverse would be true in a decrease of thyroid activity. Hamilton<sup>1</sup> has stressed the anabolic properties of androgens, and there is probably a reciprocal relationship between thyroid and testicular activity.

While the mean values are almost equal in the control group and coronary disease group, the distribution of the two arrays differs in two important manners: (a) in the coronary disease group, 17 per cent of the individuals excrete less than 6 mg. sterone daily, while only 8 per cent of the control group excrete less than 6 mg. sterone daily; (b) 24 per cent of the control group excreted more than 14 mg. of sterone daily in contrast to 12 per cent of the coronary disease group. A satisfactory explanation cannot be given in spite of the fact that a Chi square comparing the two distribution curves revealed that these were different ( $p = 0.05$ ).

Another observation which merits attention, but which cannot be explained at this juncture, is the level of excreted sterone in the 8 men who died since the inception of this study. The mean sterone excreted in this group was  $7.68 \pm 1.02$  mg. daily. This value was significantly less than the mean value of daily sterone excretion in the coronary disease group. We could speculate on this observation; is it possible that these men failed to "adapt" in the sense that Selye uses the term.<sup>20</sup> An answer to this would be more possible if the 17-ketosteroids had been fractionated into the adrenal and testicular components.

Another thought which is possible and emphasized by a study now in progress on coronary heart disease in castrates is the observation that the incidence of atherosclerosis and coronary heart disease is markedly diminished in these individuals.<sup>5</sup> Hamilton<sup>1</sup> pointed out an increase in many of the male predominant pathological conditions such as gout, jejunal ulcer, Buerger's disease, hemochromatosis, and coronary heart disease at a time of life when androgenic activity (testicular secretions) is progressively declining. He further noted that these male-selecting diseases are not directly related to the intensity of androgenic activity, but would seem to be dependent upon decreasing androgens for their occurrence.

#### SUMMARY AND CONCLUSIONS

1. The amount of sterone excreted in the urine during a 24-hour period was determined in 87 males who had experienced a myocardial infarction prior to the age of 40 and whose average age at the time of this study was 38.5 years.

2. There was no significant difference between the coronary disease group and a group of healthy males in the amount of sterone excreted in the urine during a 24-hour period.

3. The urinary sterone excretion per 24 hours decreases with increasing age and gynandromorphy.

4. The urinary sterone excretion per 24 hours appears to be related to body mass and muscular tissue, as evidenced by the greater amount of sterone excreted in the urine in 24 hours in mesomorphs in contrast to ectomorphs or endomorphs.

5. The positive correlation between the daily urinary sterone excretion and basal metabolic rate corroborates the anabolic properties of androgens.

6. The average amounts of urinary sterone excreted daily in 8 men who died of coronary heart disease was significantly less than the average for the whole coronary disease group. It is postulated that this phenomenon is suggestive of failure of "adaption" in the Selye sense.

7. The relationship of the study to coronary heart disease is discussed.

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# Indications for Pulmonary Resection

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Indications for thoracotomy and pulmonary resection for cure, palliation, or diagnosis have been greatly increased within fairly recent years due to the safety with which such procedures may now be undertaken. An acceptable operative risk has evolved with the discovery of the antibiotics, the improvement of anesthesia, a better understanding of blood loss replacement, a better concept of pulmonary anatomy and physiology, and improvement of surgical techniques. Various surgeons report a fatality rate of approximately 2 per cent for lobectomy and 5 per cent for pneumonectomy.<sup>30</sup> On the whole, the mortality and morbidity resulting from pulmonary resection compare favorably with those from operations of similar magnitude upon other regions of the body.

With the achievement of acceptable operative risks, resectional surgery and exploratory thoracotomy have become relatively commonplace operations. Yet, all too frequently, localized pathology which lends itself well to excisional therapy, as well as undiagnosed asymptomatic chest lesions, are watched for changes over long periods of time, during which the benefits of early surgical extirpation of these lesions are lost. Exploratory thoracotomy should be undertaken as readily for undiagnosed pulmonary pathology as exploratory laparotomy is performed for undiagnosed or suspected abdominal pathology.

Indications for pulmonary resection may be grouped generally under the following headings:

1. Lesions known to be carcinoma which are not definitely inoperable and lesions in which, although undiagnosed, the possibility of carcinoma has not been ruled out.
2. Suppurative pulmonary disease and lesions in which infection is a serious threat.
3. Selected tuberculous lesions.
4. Miscellaneous group.

## 1. KNOWN OR SUSPECTED CARCINOMATOUS LESIONS

Bronchogenic carcinoma may be considered to be of two locational varieties—those which occur in the main bronchus or its primary subdivisions and those which arise as peripheral tumors.

The first usually manifest themselves as obstructive lesions of the bronchial tree and eventually by atelectasis of the entire lung or any portion of the lung distal to the obstructing lesion. The patient may remain relatively asymptomatic, or infection beyond the ob-

struction may result in constitutional symptoms. Often a partial obstruction produced by such a neoplasm is completed in the presence of a superimposed respiratory infection. The diagnosis of unresolved pneumonia in a lung which fails to clear within a matter of a week or two is a most dangerous one.<sup>20</sup>

Single, circumscribed, intrathoracic densities within the lung substance, often discovered in the course of routine x-rays, may well be carcinomatous, although benign tumors, filled cysts and tuberculomas are to be considered. However, approximately 25 per cent of such lesions are malignant,<sup>1, 30</sup> and, although asymptomatic, may have undergone metastatic spread at the time of casual discovery. Three-fourths or more of such asymptomatic carcinomas are resectable, but the resectability rate falls to approximately one-third when symptoms are present.<sup>19</sup> The error of further observation of such an asymptomatic finding, in hope that it is an unimportant lesion, is all too often regretted. There is no possible way to safely diagnose these as benign tumors or rule out their malignant potentialities, nor can a filled cyst be diagnosed by its x-ray appearance. Therefore, the presence of either of these lesions is reason for their removal.

Tuberculomas are usually much more well demarcated than malignant growths, but not necessarily so, and although the presence of calcium in the mass is suggestive of its tuberculous origin, carcinoma can arise at the site of an old tuberculous process. Furthermore, tuberculomas are potentially dangerous lesions with caseous centers from which tubercle bacilli may be shed, and are themselves indication for removal.

When it is realized that carcinoma of the lung has increased rapidly in incidence to become the commonest visceral cancer in the male, with a continued increase in incidence in both sexes anticipated,<sup>10</sup> the necessity of early exploration of all pulmonary lesions in which the diagnosis of carcinoma cannot be ruled out is obvious. Early discovery and removal of such lesions offer the only hope, at the present time, of improving the poor results which exist in the treatment of bronchogenic carcinoma.<sup>5, 18</sup> If resection is possible, a five-year survival rate of 25 per cent can reasonably be expected.<sup>29</sup> More exploratory operations will mean fewer deaths from pulmonary carcinoma.

## 2. SUPPURATIVE PULMONARY DISEASE AND LESIONS IN WHICH INFECTION IS A SERIOUS THREAT

Suppurative pulmonary disease includes bronchiec-

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tasis, lung abscess, and chronic suppurating pneumonitis. Removal of such primarily involved areas results in cure or improvement of secondary pathological effects on other parts of the lung and other organs.

Bronchiectasis, in addition to the chronic effects of the disease itself, gives rise to numerous serious complications such as lung abscess, empyema, brain abscess, and pulmonary hemorrhage. Medical treatment offers only temporary symptomatic relief and palliation of the progressive, non-reversible pathology. The morbidity and mortality of bronchiectasis and its complications justify resectional surgery. Unilateral and bilateral involvement respond well to surgical resection.<sup>15, 16, 23</sup>

The treatment of acute lung abscess may be non-operative if the response to antibiotics is satisfactory. However, there is general agreement that chronic lung abscess should be treated by primary lobectomy rather than by external drainage.<sup>28</sup> Chronic lung abscess must be differentiated from the ulcerating type of bronchogenic carcinoma, tuberculous cavities, bronchiectasis with secondary abscess formation, and infected pulmonary cysts—all of which can be diagnosed and treated by resection.

The mortality of drainage of a lung abscess, estimated as low as 12 per cent with the use of antibiotics,<sup>4</sup> is considerably higher than that of resection, and longer lasting morbidity results, often necessitating the wearing of a thoracotomy tube over a prolonged period of time. Furthermore, lung abscesses may be multiple or so formed or located as to make external drainage inadequate or impossible. Recurrence after drainage and the development of bronchiectasis about the abscess site are other factors which may eventually necessitate resection. Thus resection in the first place, with complete removal of the diseased area, is the procedure of choice in lung abscess, especially if malignancy cannot be ruled out.<sup>9, 12</sup>

Chronic suppurating pneumonitis is a progressive low grade suppurative process which fails to respond adequately to antibiotic therapy. The so-called "middle-lobe syndrome"<sup>11, 22</sup> may be included in this group. Because the process tends to extend and cross fissures, resectional surgery should be undertaken relatively early in the course of the disease when it becomes evident that the pneumonitis is not responding adequately to medical treatment. Wide resectional surgery in cases of chronic suppurating pneumonitis has given good results with fatalities of approximately 2 per cent reported.<sup>30</sup>

Lesions which are susceptible to serious infection are exemplified by lung cysts which open into the bronchial tree. Early resection of such cysts is recommended.<sup>24</sup>

### 3. TUBERCULOSIS

Resectional surgery is becoming more and more prominent in the treatment of tuberculosis. While some advocate early resection of isolated cavities, the tendency has been to submit these patients to long periods of antibiotic treatment, resorting to surgery only if the disease fails to respond adequately to such therapy, or for the removal of the obvious and potentially dangerous residue of the disease in hope of reducing the recurrence rate in these cases. An important and difficult decision is the determination of the time to operate, keeping the safety factor primarily in mind but also endeavoring to avoid prolonging the period these patients must remain hospitalized. Each case must be individualized and the surgical treatment fitted into the long range therapy.

Resectional surgery is replacing to a large extent the time-honored thoracoplasty, by which scale of comparison its merits are weighed. The two procedures are often combined, being performed separately or concomitantly.<sup>6, 26</sup> Many patients who will not accept thoracoplasties are willing to undergo resectional surgery.

Generally accepted indications for pulmonary resection include principal focal areas of tuberculous pathology which can be removed by resection and thus permit a more favorable immunological relationship to be established with the remaining infection, and failures or probable failures following thoracoplasty or other collapse therapy. The latter includes bronchostenosis, lower lobe lesions, tuberculomas, nodular residual tuberculous lesions (especially those in the superior and posterior portions of the pulmonary lobes),<sup>25</sup> tension cavities, giant cavities, tuberculous bronchiectasis, and destroyed lung tissue, often with empyema and bronchopleural fistula.<sup>27</sup> Bilateral apical disease can often be treated successfully by resection bilaterally or unilaterally in conjunction with another measure, such as thoracoplasty, on the opposite side.

Associated suppurative disease or other pathology is often an indication for resection. When the presence of carcinoma co-existing with pulmonary tuberculosis is known or suspected,<sup>14</sup> resectional therapy is mandatory.

### 4. MISCELLANEOUS GROUP

Numerous and various pathological lesions which do not fit into the above categories are indications for pulmonary resection, such as arteriovenous aneurysms of the lung,<sup>17</sup> areas of severe irradiation fibrosis,<sup>3</sup> focal pulmonary coccidioidomycotic lesions,<sup>13</sup> giant cysts and emphysematous blebs,<sup>2, 7, 21</sup> and occasionally solitary pulmonary tumors which have metastasized from malignant neoplasms elsewhere in the body, the primary malignancy having been re-

moved.<sup>8</sup> Such a solitary pulmonary metastatic lesion appearing some time after removal of the original malignancy cannot be differentiated, in most cases, from a primary lung tumor, and operation is indicated on this basis alone.

#### CONCLUSIONS

1. Thoracotomy and pulmonary resection are indicated in lesions known to be carcinoma which are not definitely inoperable, in lesions in which, although undiagnosed, the possibility of carcinoma has not been ruled out, in suppurative pulmonary disease or lesions in which infection is a serious threat, in selected tuberculous lesions, and in a miscellaneous group of more rarely encountered pathology.

2. Earlier exploration of lesions in which the possibility of carcinoma cannot be ruled out offers the only hope, at the present time, of improving the poor results which exist in the treatment of bronchogenic carcinoma.

3. Excision of resectable lesions discussed under the various headings will reduce long lasting morbidity associated with such lesions and their complications, as well as reduce the mortality in these cases.

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The hope of freedom depends in real measure upon our strength, our heart and our wisdom. We must be strong in arms. We must be strong in the source of all our armament—our productivity. We all—workers and farmers, foremen and financiers, technicians and builders—all must produce, produce more and produce yet more. We must be strong, above all, in the spiritual resources upon which all else depends. We must be devoted with all our heart to the values we defend. We must know that each of these values and virtues applies with equal force at the ends of the earth and in our relations with our neighbor next door.

*Dwight D. Eisenhower*



## PRESIDENT'S PAGE

Dear Doctor:

It is particularly heartening to see the early activity of the standing committees for the ensuing year. It is profound evidence of individual members' interest. The Committees on Child Welfare, on Control of Cancer, and perhaps others met during the state meeting in Wichita. Since that time there have been meetings of the following committees: Conservation of Eyesight, Control of Cancer, Hospital Survey and Maternal Welfare, and besides these several others including Child Welfare, Constitution and Rules, Medical Assistants, and Study of Heart Disease have conducted business by way of correspondence.

The program of the Kansas Medical Society in any one year is measured by only one yardstick. That measure is not what your officers may do. It is what the individual members do to further the standing of medicine both professionally and from a public relations standpoint. Small groups of members are banded together in standing committees to carry on unfinished business from the preceding year and to foster new projects as the occasion or suggestion arises. I am most sure that your committee chairmen will welcome and study in their committees any worth-while suggestions that may arise in the mind of any member of the Society.

During the year many others of you will be asked to carry out important duties in connection with Society progress. In many instances this will be in the form of individual efforts. In others it will be the efforts of especially appointed committees either from a component society level or the state society level.

May I take this opportunity to express the appreciation of your officers for the excellent interest and activity to date and to encourage a continuation of this effort in the future.

A handwritten signature in cursive script, reading "Lucien B. Pyle". The signature is written in dark ink and is positioned at the bottom of the page, below the main body of text.

## EDITORIAL COMMENT

### KANSAS LAW ON FEE SPLITTING

This JOURNAL did not intend to enter the discussion of fee splitting. Such decision arose not with the view toward evading an issue but because the problem seems not to be prevalent in serious proportions in Kansas. However, the subject is currently of nationwide interest, having been argued both in professional and lay publications, so it was considered appropriate that a conservative, factual review might be printed in this JOURNAL.

The American College of Surgeons is credited with igniting the spark that set off a wave of literature on this subject. Numerous delegates to the American Medical Association's New York convention in June, 1953, believing the controversy brought an unwarranted amount of criticism upon physicians in relation to the small percentage of offenders, offered at least 11 resolutions, all of which in one way or another reprimanded General Hawley. He appeared personally before the committee and argued his case effectively enough that all resolutions were discarded. In their place the House of Delegates agreed that doctors should abide by the Code of Ethics. With such action the subject was concluded.

The A.M.A. Code of Ethics has something to say about fee splitting. Section 6 states in part, "... The acceptance of rebates on prescriptions or appliances, or of commissions from attendants who aid in the care of patients is unethical. . . . He (the physician) should receive his remuneration for professional services rendered only in the amount of his fee specifically announced to his patient at the time the service is rendered or in the form of a subsequent statement, and he should not accept additional compensation secretly or openly, directly or indirectly, from any other source."

The above takes on added significance in view of powers vested in the Kansas State Board of Medical Registration and Examination. Under Section 65-1001 of the General Statutes of Kansas 1949, which deals with the medical board, may be found the statement that the board "... may, after notice and hearing, revoke the certificate for . . . unprofessional conduct."

Official board rulings are permissible and have the effect of law. Among such rulings is this statement by the board, "A wilful failure to abide by the principles of medical ethics promulgated by the American Medical Association and adopted by this board shall be deemed unprofessional conduct."

There is, in addition to the above, a little known statute in Kansas which deals directly with this subject. Refer again to the General Statutes of Kansas 1949, Sections 21-2440 to 21-2443 which have been in effect at least since 1915. These state in part, "It shall be unlawful for any physician or surgeon to pay or offer to pay to any other physician or surgeon or to any person in his behalf, either directly or indirectly, any fee, money or thing of value of any kind in consideration of such other physician's or surgeon's bringing to him, or agreeing or promising to bring to him, for treatment, any patient, assisting to treat or operate upon any such patient so sent, or advising or agreeing, promising or proposing to advise any patient to consult him, or to be treated or operated upon by him, or assisting to treat or operate upon any patient so advised. . . ."

Following sections declare comparable practices between hospitals and physicians to be equally illegal. Violators of this act, "... upon conviction shall be punished by a fine of not more than \$500 and by imprisonment in the county jail for not exceeding six months, or both, and such conviction shall operate as an annulment of the license of such convicted person to practice as a physician and surgeon in this state."

This law also states how several physicians may legally serve a patient during a single illness, as follows: "... It shall not be unlawful for such physicians or surgeons to pay or receive such fee, money or value where full disclosure as to the amount to be paid and received shall have been made to the patient or person liable for the fees to be charged for the treatment of such patient before such patient or person shall have paid or agreed upon the amount of the fees to be paid by them."

Kansas law, therefore, spells out exactly what the American Medical Association holds in its Code of Ethics. The Kansas Medical Society has always held the same position. There is no fault as long as the patient knows who he is paying, how much, and what for. It is as simple as that, and because the vast majority of Kansas doctors have always followed that custom, mention of this subject at the present time is not intended for criticism but rather as a historic review of Kansas regulations in this regard.

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### TREATY LAW

Everyone has heard of the dangers of treaty law and of the proposed Bricker resolution which calls for a constitutional amendment declaring that treaties cannot be binding upon the United States if their content is contrary to the Constitution. This resolution appears to be well on its way to passage,



and one of the great hazards to American democracy can thereafter be effectively controlled.

Previous reports have carried the story of the International Labor Organization (the I.L.O.) and its world convention where a series of tenets on social security were approved. Memory has it that nine such principles were included in one sweeping action. The majority spelled out principles with which no one could take serious exception, but included was an endorsement of socialized medicine. The important effect, however, came from an attached resolution also passed by the I.L.O. to the effect that whenever any nation ratified any four of these tenets all nine shall have been considered adopted by such nation.

In the United States it would require a message from the President and a yes vote of two-thirds of the members of the Senate present at the time of action. Power of this kind has serious possibilities, and the Bricker resolution is designed to curb this danger. Another example, we are told, comes from a presently active treaty with Italy to the effect that no state, regardless of its licensure law, may refuse practice privileges to any Italian physician who desires to practice in this country. This was never passed as a law. It was simply a hidden clause in a treaty which the Senate ratified.

During the Conference of Presidents in New York last month, a speaker developed this subject with some interesting historical data. Printed copies of this talk are not available at the time of this writing, so the material may not be accurate as far as specific points are concerned. However, the general effect is correct and will be obvious even though the details may not be exactly as stated.

One of the earliest examples of the use of treaties as substitutes for law comes from a federal case involving the state of Missouri. The incident dates back probably to the 1880's, during which time many migratory birds rested in Missouri waters during their flight between Canada and southern locations. At this time Missouri either had no laws governing the preservation of wild life or they were so loosely enforced that great numbers of migratory birds were annually destroyed. The problem became so severe that fear was expressed that certain species of game birds would become annihilated.

The federal government then passed a law restricting the destruction of migratory birds. Missouri immediately took the question to court on the grounds that the action was an invasion of states' rights. The federal court ruled in support of Missouri's contention and declared further that the law was unconstitutional. The federal prosecutor then advised that the question not be taken to the Supreme Court of

the United States because of his certainty that the decision of the lower court would be upheld.

He elected instead to solve the problem by way of a treaty and in subsequent negotiations with Canada declared that certain birds could not be killed during the migratory season. The Senate ratified the treaty, and this action was held by the Supreme Court of the United States to be constitutional.

Another case, the name of which is not now available, brought the question squarely to a decision in which the United States Supreme Court declared that the treaty making power does not come out of the Constitution but comes from above the Constitution. This creates a power within the Senate to pass legislation under treaty programs on subjects they have no right to act upon according to the Constitution.

The above discussion is not just a rhetorical argument. It represents and has represented a frightful threat against democracy. Under existing conditions anything, without any limit whatever, can be passed if presented in the form of a treaty so long as two-thirds of the members of the Senate present at the meeting vote in favor of the action. Therefore, the Bricker resolution should be of outstanding interest to everyone in the nation, and each person should individually urge passage of this particular resolution according to all his available influences.

## PUBLIC RELATIONS IN ATCHISON COUNTY

The medical profession of Atchison County received an unusual tribute on Sunday, May 17, when a section of the *Atchison Globe* was issued in their honor. When a newspaper of high journalistic standing, such as the *Atchison Globe*, devotes an entire section to health and medical care, that fact itself speaks for the community interest in the subject.

On the other side, as an expression of the physicians' interest in local activities, each member of the Atchison County Medical Society contributed an article to the section on some topic pertaining to medicine. Possibly the matter of public relations was not considered by anyone involved, but from this editor's viewpoint the special section did more to show the people of Atchison that the medical profession is interested in them than could any number of expressly labeled public relations projects.

The physicians' articles were concise and factual. Each covered one phase of medical care, such as the symptoms and treatment of a particular disease, progress in the care of the sick, etc. Specifically, the following subjects were covered: history of the Kansas Medical Society, Dr. Edwin T. Wulff; modern care of the sick, Dr. Spencer Fast; tuberculosis, Dr. A. Whitaker; diseases of all ages, Dr. John Griffith; si-

nus diseases, Dr. F. I. Stuart; pathology, Dr. Ira Morrison; care of the eyes, Dr. E. J. Bribach; history of the Atchison County Medical Society, Dr. Winstan L. Anderson; infantile paralysis, Dr. Wayne Wallace; medical charges, Dr. J. H. Thompson; radiology, Dr. Frank Bosse; medical economics, Dr. G. A. Patton; surgery, Dr. Charles S. Brady, and immunizations, Dr. Robert O. Brown.

The staff of the *Atchison Globe* wrote stories to tell about activities of the county medical society, operation of the hospital, the value of laboratory procedures, public and school health programs. They told also of activities of the Woman's Auxiliary to the Atchison County Medical Society and the Atchison County Medical Assistants' Society. Advertisements in the section, carrying signatures of various businesses in the city, paid tribute to the medical profession.

In a lighter vein, a staff writer gave a more personal view of the Atchison physicians under the caption "Yes . . . They're Human! Your 'Doc' is a Guy Pretty Much Like You." Since it seems such a warm and sincere tribute, the article is reprinted below:

Most everyone knows Atchison county's doctors, professionally.

That's because we need 'em, and use 'em.

But how are they when they're "off the job?" What

kind of citizens do they make? Church members? Family men?

Well, they're pretty much the same as the rest of us in these categories.

(Some of 'em are better!)

**WHERE THEY GO TO CHURCH**—Atchison county physicians worship in the Presbyterian, St. Benedict's, St. Joseph's, Methodist, Trinity Episcopal and Christian churches. Several are active in an official capacity, serving on boards and committees.

**WHAT KIND OF FAMILY MEN**—As fathers, they have 36 children and four grandchildren. They're as interested in the problems of Atchison youth as you are.

**MILITARY SERVICE?** Plenty. Among them, they have served 31 years in the armed forces.

**GOOD CITIZENS?** They are on boards and committees of the YMCA, American Legion, VFW, Fellowship club, Kiwanis, Rotary, Atchison County Guidance Clinic, Elks, Knights of Columbus, Boy Scouts, Atchison County Public Health association, Atchison board of education, Chamber of Commerce, Knights Templar, Shriners, Masons, Odd Fellows.

**DO THEY EVER RELAX?** Uh huh. Their hobbies include photography, electronics, woodworking, stamp collecting, painting, gardening, Soap Box derby, hunting, fishing, ceramics, airplanes, golfing, and

## SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

Claude D. Baker, M.D.  
4172 Menlo Drive  
Wichita, Kansas

William W. Benefiel, M.D.  
P. O. Box 105  
Medicine Lodge, Kansas

Ralph S. Crawshaw, M.D.  
2113 Potomac Drive  
Topeka, Kansas

James E. Crockett, M.D.  
1919 Olathe Boulevard  
Kansas City, Kansas

Albert F. Crumley, M.D.  
619 North Main  
Ottawa, Kansas

Karl A. Erlich, M.D.  
226½ West Central  
El Dorado, Kansas

Donald R. Germann, M.D.  
4603 Melvin Street  
Kansas City, Kansas

Dan Wesley Hoebert, M.D.  
227 Poplar  
Halstead, Kansas

Erwin M. Janzen, M.D.  
120 Southwest 2nd Street  
Newton, Kansas

Maurice H. Jennison, M.D.  
4136 Adams  
Kansas City, Kansas

Warren L. Krump, M.D.  
312 Northeast Avenue  
Oberlin, Kansas

Glenn A. Lessenden, M.D.  
1309 Ohio Street  
Lawrence, Kansas

Lester E. McGonigle, M.D.  
Potwin, Kansas

John W. McKay, M.D.  
3916 Willow Drive  
Wichita, Kansas

Charles W. Merten, M.D.  
630 Santa Fe  
Augusta, Kansas

William S. Mowrey, M.D.  
Luray, Kansas

William L. Padgett, M.D.  
301 South Maple  
McPherson, Kansas

Richard V. Polson, M.D.  
722 South Grove  
Wichita, Kansas

Marion A. Throckmorton, M.D.  
1026 Perry  
Wichita, Kansas

Richard N. Todd, M.D.  
916 West Pine Avenue  
El Dorado, Kansas

S. B. Whittenberger, M.D.  
6029 Delmar  
Mission, Kansas



whenever they can (like all of us) they enjoy vacations with their families.

**DO THEY TRY TO IMPROVE THEMSELVES?** Here's what they belong to, for continuous study and improvement in their profession—College of Surgeons, American Medical Association, Kansas Medical Society, Atchison County Medical Society, American Academy of General Practice, American Association of Railroad Surgeons, Military Surgeons of the U. S., Society of Aeronautics Medicine, Missouri Pacific Medical Association, Kansas Academy of General Practice, Industrial Medical Association, American Trudeau Society, American Physicians Art Association, Kansas University medical faculty, American College of Allergy, American Academy of Allergy, American Society of Anesthesiologists, and they have taken or attended approximately 90 post graduate medical courses and conventions in the last five years!

**WHAT DOES ALL THIS MEAN?** We asked one "doc." He said: "It means we thoroughly like Atchison, and when something needs boosting, look us up."

### CONGRATULATIONS, KANSAS

According to Mr. Miles Pulford, executive director of the Kansas Division of the American Cancer Society, Kansas was the second state to go over its quota in the recent drive for cancer funds. The Kansas quota was \$223,000, and this amount was accumulated on May 6, a record surpassed only by the state of Delaware.

Kansas had organized drives in all 105 counties. Mr. John T. Andrews, state campaign chairman, with the co-operation of various leaders in the counties, is to be commended for his effort.

Marked with unusually high spirit, the cancer drive in Kansas raised more money during this campaign than ever before. Radio and newspaper co-operation, as well as printed material available to every Kansan during the month of April this year by the cancer society, stimulated enthusiasm never before attained by so large a group.

Eighty-one counties reached their goal, some going well over the top, with Wallace County for the second consecutive year being the first to report a full quota.

To date Kansas has surpassed its quota by more than \$50,000. Of the total amount contributed, 40 per cent goes to the national office of the American Cancer Society. Of this 40 per cent, 25 per cent is used wholly for research and 15 per cent for the national program of education and service. Sixty per cent of the total amount collected remains in the state from which the contributions were received for research, education, and service at the state level.

Kansas physicians will be particularly pleased with

this good record since their interest in cancer will not abate until the secrets of cause and cure are known. They are grateful for the educational advantages offered them through publications issued by the cancer society and through the two-day post-graduate courses presented as the Annual Mid-West Cancer Conference.

### DISTRIBUTION OF GAMMA GLOBULIN

A detailed plan for allocating available supplies of gamma globulin in Kansas was announced recently by the Kansas State Board of Health. The substance is available to physicians for clinically diagnosed cases of polio and for familial contacts between 1 and 20 years of age and pregnant women, regardless of age.

A series of hospital depots has been set up throughout the state. The hospital depot may, on report of the case and receipt of a list of the names, ages, and weights of the familial contacts, administer gamma globulin to these individuals. In instances in which the physician deems it desirable, the depot will furnish the physician a sufficient amount for administration to family contacts. Administration at the depot is advisable, however, to avoid waste since gamma globulin is received in 10 cc. vials. The recommended dosage is 0.14 cc. per pound of body weight. The depot is authorized to charge \$1.00 per dose to cover the cost of administration.

No gamma globulin should be administered to the families of suspected cases, nor should it be given to the families of patients whose original illness was not recognized within the first week. In the latter case, administration would be too late to be of value. For the same reason it is also desirable to avoid use of gamma globulin in familial contacts who show temperature elevation, malaise, headache, stiff back, or stiff neck at the time of recognition of the initial case.

Kansas has been allotted less than 3,000 average doses for a population of almost 2,000,000 people. Distribution of gamma globulin has been planned by the Committee on Child Welfare of the Kansas Medical Society, the University of Kansas Medical Center, the Local Health Officers' Association, the Kansas Pharmaceutical Association, the Kansas Hospital Association, the Red Cross, the National Foundation for Infantile Paralysis, and the Kansas State Board of Health.

If polio threatens any community in serious epidemic proportions, the state advisory committee will attempt to secure additional allotments of gamma globulin from the Office of Defense Mobilization, which controls the national pool. A small extra emergency allotment has already been provided for use at Prairie Village, where the first serious 1953 outbreak of polio in Kansas has occurred.

The hospitals at which gamma globulin depots have been set up, listed alphabetically by towns, are as follows: Atchison, Atchison Hospital; Coffeyville, Coffeyville Memorial; Colby, St. Thomas; Concordia, St. Joseph's; Dodge City, Trinity; El Dorado, Susan B. Allen Memorial; Emporia, Newman Memorial County; Garden City, St. Catherine; Great Bend, St. Rose; Hays, St. Anthony's; Hutchinson, Grace; Iola, Allen County; Kansas City, Bethany and University of Kansas Medical Center; Lawrence, Lawrence Memorial; Liberal, Epworth; Manhattan, St. Mary; Norton, Norton County; Pittsburg, Mt. Carmel; Pratt, Pratt County; Sabetha, St. Anthony Murdock Memorial; Salina, Asbury; Topeka, Stormont-Vail; Wichita, St. Francis; Wichita, Wesley.

#### KANSAS HEART ASSOCIATION MEETING

The annual meeting of the Kansas Heart Association was held at the Hotel Broadview, Emporia, on May 16. Dr. Lee H. Leger, Kansas City, was installed as president for the year ending July 1, 1954, and the following additional officers were elected to serve with him: president-elect, Dr. Clarence W. Erickson, Pittsburg; vice-president, Dr. G. Loren Norris, Winfield; secretary, Mr. Frank Sullivan, Topeka, and treasurer, Mr. Willard J. Breidenthal, Kansas City.

It was reported that a total of \$26,664.94 had been recorded in the 1953 campaign. Of this amount, \$16,-332.16 came from contributions, \$2,784.79 from memorial gifts, \$395 from memberships, and \$7,-152.99 from pledges not yet fulfilled.

#### BOARD OF HEALTH MEETS

Dr. H. Penfield Jones, Lawrence, was elected president of the Kansas State Board of Health at the annual meeting of the board held at Topeka on June 12. Dr. Dick B. McKee, Pittsburg, was named vice-president, and Dr. Thomas R. Hood was chosen to continue as executive secretary.

Physician members of the board and the dates on which their terms expire are as follows: Dr. Jones, 1954; Dr. McKee, 1955; Dr. E. A. McClintock, Topeka, 1955; Dr. Robert C. Polson, Great Bend, 1956; Dr. H. S. O'Donnell, Ellsworth, 1954. Others on the board are: Mr. Ben L. Williamson, Troy, sanitary engineer, 1955; Mother Mary Anne, Wichita, representing hospitals, 1956; Thomas P. Crispell, D.V.M., Parsons, 1956; George M. Coffey, D.D.S., Ulysses, 1954, and Mr. Wilber Murray, Hutchinson, representing pharmacists, 1954.

The board voted to discontinue running serological tests for industrial purposes on August 1, 1953, since the members felt that the expense of such tests should

be borne by the industry concerned. Industries requiring serological tests have been asked to arrange to have the work done at commercial laboratories after the effective date of the ruling.

## BLUE SHIELD

### EXPEDITING YOUR BLUE SHIELD PAYMENT

Every Kansas physician who participates in the Blue Shield program will soon receive a reproduced service statement with comments on the side indicating the leading causes for occasional delay in Blue Shield payments. Some word of explanation here may be helpful in understanding these reasons.

1. *No indication as to whether service is to member, father, son, mother or daughter. Birth date is omitted.*

Obviously, the name of the patient is necessary; his relationship to the member and his age should be indicated so that his eligibility for service may be determined. Every unmarried child of a member is considered to be a part of the family membership until he reaches the age of 19; then it is possible to set up a sponsored membership of his own. While he is still a part of the family group, he is eligible for all benefits available to single members.

2. *The membership number is omitted or incorrect.*

The membership number is desirable but not entirely necessary; a claim should never be held up because of the lack of this information. If correct names and addresses are given, the membership can usually be located in the central office. Patients should be urged to carry their Blue Cross-Blue Shield membership cards with them at all times, however.

3. *Diagnosis omitted.*

Diagnosis is of prime importance; in hospital cases the Blue Cross requires that the discharge diagnosis be included before payment can be made. If the Blue Shield claim is submitted before the discharge date, the admitting diagnosis will suffice. Services available under Workmen's Compensation or any other public law are not payable by Blue Shield; therefore, it is important that this item be checked.

4. *Type of surgery and date omitted.*

The type of surgery and date it is performed are probably as important as any other piece of information on the report. Enough space is allowed for the



usual procedures, but if more is needed it is desirable to turn the report over and use the other side for detailed explanation. If doctors and their assistants would remember that staff members handling cases are all lay people who are continuously striving to familiarize themselves with medical and surgical nomenclature, more simple descriptions of procedures would probably be the result. This would expedite pricing and approving. The date of surgery, when omitted, can sometimes be secured from the Blue Cross case, but often the physician's report reaches the office before the discharge date and the hospital has not sent in its report. This must be available before a case can be approved because the experience must be checked to eliminate the possibility of duplication in payment.

*5. Type of fracture not indicated or reduction not noted as open or closed.*

In fracture cases, payment is made on the basis of the type of reduction necessary. In most instances an open reduction is payable at twice the amount allowed for a closed reduction; compound fracture reductions are payable at one and one-half the amount listed.

*6. Accidental injuries not described. Sutures not numbered.*

Many physicians wonder why Blue Shield is so determined to know the number of sutures required to close a wound. This is the only way that an equitable payment can be determined by staff members without submitting a case to the Review Committee. (This is an appointed committee of three physicians meeting weekly to adjudicate difficult cases.) Payment for suturing is made on the basis of \$5.00 for the first stitch and \$1.00 for each stitch thereafter. In severe accidents where extensive lacerations occur, a complete description of the necessary repairs is helpful, and individual consideration of the Review Committee will be required.

*7. Date of x-ray omitted, also information as to original or re-check.*

Diagnostic x-ray must be given within 30 days of the accident to be available. Re-checks are permitted up to the \$25 annual maximum, if necessary to determine the course of fracture healing.

*8. Date of accident omitted in emergency treatment.*

In submitting claims for treatment of minor injuries, the date must be included since the \$5.00 emergency payment is available only if care is given within 24 hours of the time of the accident.

*9. Omission of date and type of surgery by anesthesiologist.*

When an anesthesiologist submits his own service reports, he should always be sure to include the date of surgery, kind of surgery, and by whom performed. Payment can now be made to the anesthesiologist on submission of a claim, even though the claim for surgery has not yet been submitted, if all the necessary information is included. If the wrong amount is paid, an adjustment can be made at a late payment date.

*10. Omission of date of admission and discharge.*

A claim for non-surgical services must include the dates of admission and discharge. Under the existing membership agreement, no payment can be made for the first and last days of hospitalization. Members are entitled to payment of \$5.00 for the second, third and fourth days of hospitalization and \$3.00 per day up to 30 days. If a longer hospitalization is necessary, payment can be made at \$2.00 per day for an additional 60 days, making a total of 90 days available.

*11. Omission of necessary information in radiation therapy.*

When malignant conditions require radiation therapy, full information should be submitted, including the number of treatments and whether or not it is a full series. Subsequent series are payable at one-half the original allowance.

*12. Omission of signature, or signature by some other agent.*

The busy physician probably wonders why Blue Shield insists that his signature be affixed to all claims. This may be an important consideration in Insurance Department audits of Blue Shield records. The service report contains professional information which should be submitted only over the signature of the physician giving the service. This is one small moment of a doctor's busy day which Blue Shield considers it necessary to require in return for prompt payment of all cases.

The volume of cases handled by Blue Shield has increased considerably since the first case was paid in 1946. Approximately 350 cases are processed for payment every working day of the month, and payments are made twice each month. A quick look at every service report before it leaves the doctor's office to be sure that all possible information has been given will expedite approval and payment.

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The average person consumes approximately 1,550 pounds of food annually, according to the National Dairy Council.

# Clinical Pathological Conference\*

## CASE PRESENTATION

The patient, a 25-year-old married Negro female, was admitted to KUMC September 25, 1952, and expired October 1, 1952.

The patient was admitted to the emergency room unable to give a reliable history and with no palpable pulse, unobtainable blood pressure, and heart rate of 160 per minute. There had been dysuria and abdominal and left flank pain for four days prior to admission. The patient had received penicillin at another hospital as an outpatient 48 hours prior to admission, and 24 hours prior to admission she had again received penicillin intramuscularly.

Subsequent history obtained from the patient's husband revealed intermittent episodes for the past three or four months of nausea, vomiting, upper quadrant pain, and constipation relieved by cathartics. The patient's husband had been out of town for the past few days and he was not certain of any of the history. The patient described having a miscarriage approximately three weeks prior to admission.

At the age of 16 years the patient suffered severe laceration of the urinary bladder during a labor and delivery. She subsequently had had four operations on her bladder.

Upon admission, the patient was in a state of extreme dehydration and circulatory collapse. Following bilateral surgical exposure of superficial leg veins and infusion of intravenous fluids and two units of plasma, the blood pressure was 140/90. Chest and lungs were negative upon physical examination, the sounds were of good quality, without murmurs and having a rapid regular rate. The abdomen was moderately distended and tender throughout, with pronounced left flank tenderness and left CVA tenderness. The rectal examination was negative. Pelvic examination revealed extensive scarring of the anterior portion of the vaginal vault.

Laboratory tests on September 26, 1952, showed acid urine of specific gravity 1.010, albumin one-plus with urine loaded with pus and having some amorphous urates on microscopic examination. Blood examination showed 3,700,000 rbc, 9450 wbc with a differential count of 74 polys of which 70 were filamented, 24 lymphocytes and 2 monos. Hemoglobin was 69 per cent. Wassermann and Kahn were negative. Blood NPN was 62, sugar 140 mgm. per 100 cc., sodium 138 meq., chloride 104 meq.,  $\text{CO}_2$  18.5 meq., serum amylase 98 mgm. per 100 cc.

On September 29, 1952, the urinalysis was essentially the same; rbc 4,280,000, wbc 25,000; hemoglobin 82 per cent; polys 87, 73 filamented; lymphocytes 8; monos, 3; meta., 2. Blood NPN was 50, creatine 2.2, sugar 265 mgm. per 100 cc.;  $\text{CO}_2$  15.4 meq., sodium 135 meq., potassium 5.4 meq., chloride 107 meq.

Though a Levine tube was passed in the hospital, the patient continued to vomit and had a persistent tachycardia with blood pressure 110/70. The temperature spiked to 103° rectally.

Therapy included catheter drainage, intravenous fluids, one-sixth molar sodium lactate, blood, intravenous terramycin, and penicillin.

On September 28, 1952, a Miller-Abbott tube was passed through the pylorus, but this was pulled out. A later attempt to pass it through the pylorus was unsuccessful. Blood pressure remained at hypotensive levels, and the temperature spiked to 105°. The patient continued to vomit liquid greenish material despite gastric suction. The fever continued its septic pattern and the patient's condition worsened with death occurring October 1, 1952. Rectal temperature was 108° and blood pressure 80/60 approximately one-half hour before death.

Dr. Mahlon H. Delp (medicine), chairman: The history may be briefer than we would wish, but this patient came to the emergency room with some people who did not know too much about her history. The history essentially was of rather vague abdominal pains for three to four weeks, followed by the onset of acute abdominal pain which was not necessarily diffuse but rapidly became diffuse.

She was seen as an outpatient at one of the other hospitals in town, given penicillin, and returned home. Subsequently she was seen by a physician whom she called, and he gave her more penicillin. The patient presented herself at the emergency room here essentially in shock but still able to talk.

We are not certain just how reliable the history gained from the patient at that time was, but since she was the sole source of information, we accepted it. She did state that three weeks prior to the onset of this illness she had had an abortion from which she thought she was recovering satisfactorily. Whether or not she was, perhaps, becomes a pertinent matter in this history.

Of significance to the past history is the fact that at the age of 16 this patient went through a rather severe form of labor and suffered a laceration of her bladder. Following that, she had several operations on the bladder. That perhaps becomes of some significance.

On physical examination here, the patient was in

\* From the University of Kansas Medical Center. Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the Departments of Medicine, Obstetrics and Gynecology, Pathology, Radiology, and Surgery (Urology), and the junior and senior classes of medical students.



shock, as has already been stated—that is, she had a rapid pulse and a blood pressure that was not measurable. However, she was fairly alert. She had mild distention of the abdomen with some diffuse tenderness. Nothing is stated in the record regarding the degree of tenderness nor the findings upon palpation. I think it might be well to point out that those findings might be altered in a patient who was in cardiovascular collapse.

There was nothing too significant in the findings of Dr. Critchfield's pelvic examination later in consultation.

You will notice that in the laboratory work the urine did have pus cells. The white count was not particularly elevated—9450 cells is not an elevation. The hemoglobin was 69 per cent. There is nothing else significant. Someone might question these blood sugars, but I believe you would have to accept the fact that they were taken when the patient was getting intravenous glucose. It does not mean, in my opinion, that the patient had diabetes. Later laboratory findings were not materially changed except that the white count increased. The patient in the meantime had received blood transfusions, and her hemoglobin was somewhat elevated, too.

The patient did not do well in spite of treatment, as outlined in the protocol, and died shortly after admission with extremely high fever.

Any questions?

Question: Was there a positive blood culture at any time?



Figure 1. Flat KUB film of abdomen showing coils of small gut gas.

Dr. Delp: No.

Dr. Galen M. Tice (radiology): Films of the chest show only a high or elevated diaphragm, without evidence of cardiac or pulmonary disease.

The abdomen was filmed at the same time and shows gas in the transverse and ascending colon and numerous coils of small gut gas. There is no gas in the rectum. Differential diagnosis of the causes of gas in the small intestine lies between ileus and an obstruction.

X-rays of the abdomen a few days later show only dilated coils of small gut.

Dr. T. K. Linn (medicine): The electrocardiograph shows only a sinus tachycardia and contributes nothing to the diagnosis.

#### DIFFERENTIAL DIAGNOSIS

Mr. Gary Lee\* (senior medical student): I would like to present this case today from the standpoint of a medical student seeing the patient for the first time in the emergency room.

When she entered the emergency room she was in clinical shock. There was tachycardia, no pulse, and unobtainable blood pressure. The heart rate was 160. The only information we have is that she had dysuria, abdominal and left flank pain four days prior to admission, and that on two occasions she had received shots of penicillin.

We should run through the differential diagnosis of shock.

Traumatic shock can be ruled out very easily by cursory examination. There is no evidence of crush wounds, compound fracture of extremities, skull fractures, or burns. Psychic shock certainly would not produce this picture. There is no history of any preceding surgery. Hemorrhagic shock again is easily ruled out by examination. There is no history of poisoning (for example, phosphorus). There is no history of acute alcoholism nor can we smell any odor of alcohol.

Coronary thrombosis usually gives a history of chest pain.

A ruptured ectopic pregnancy could produce this picture. We have no history of her menstrual periods, so we can't rely on that point. However, later on, no mass was found upon pelvic examination. But at this point we can't rule it out.

Pulmonary embolism would produce sudden chest pain and other findings.

Acute intestinal obstruction is a possibility.

Some overwhelming infection certainly is a possibility.

Lastly, general peritonitis certainly can lead to this picture.

\* Lee received his M.D. in June, 1953.

The patient was taken up to the ward then and given intravenous fluids and two units of plasma, the general measures of treatment for shock. On examination, after her blood pressure had risen to 140/90, all the positive findings were located in the abdomen. These included some distention and tenderness throughout the abdomen, with pronounced left flank tenderness. The temperature was elevated also.

This must go along with a clinical picture of peritonitis, as does the vomiting and tachycardia.

She certainly had abdominal tenderness and distention. I assume there were no bowel sounds, and that would indicate paralytic ileus, confirmed later by x-ray findings.

Obviously, it's a bacterial infection and it's peritonitis. The one-plus albumin and much pus in the urine, together with the physical findings, indicates some type of kidney infection, either pyelitis or pyelonephritis. Amorphous urates are found in febrile conditions, so they don't help us beyond that fact.

The fact that the white blood cell count was below 10,000 could be a disturbing factor, but I believe that we can explain it on the basis of the fact that this is an overwhelming infection, and in overwhelming infections you can actually get a depression of the bone marrow.

Having determined the diagnosis of peritonitis and some type of kidney infection (either pyelitis or pyelonephritis), we should consider a differential diagnosis of peritonitis. We have no history of appendicitis, so we can rule it out. The history does not indicate perforation of a viscus.

Gonorrheal salpingitis could be a possibility except that no masses were found in the adnexal areas.

Peritonitis could be due to trauma (such as perforation of the intestine). There is no history of trauma.

Diverticulitis with a perforation certainly is a possibility because it usually perforates in the sigmoid or in the left lower area of the abdomen. A perforation of Meckel's diverticulum is a possibility.

Ruptured tubal ovarian abscess could be a possibility, as could puerperal sepsis or postabortal sepsis.

Then the husband furnished further information. We learned that the patient had had intermittent episodes of nausea and vomiting for the past three or four months, along with upper quadrant pain and constipation—all suggesting pregnancy. Then the husband stated that this patient had had a miscarriage approximately three weeks prior to admission. In other words, there is a possible four-months pregnancy terminating in an abortion. Then we also get this history that at the age of 16 she had a lot of trouble during a labor and her urinary bladder was lacerated, and that subsequently the patient had four operations on the bladder. What would require four

operations? She could have had a vesicovaginal fistula which constantly required repair.

The etiology of this peritonitis is the disturbing factor. Since we have the history of an abortion and of urinary bladder trouble, we can approach it from two directions, namely, postabortal infection and kidney infection.

If it were postabortal infection with pelvic cellulitis, physical examination of the rectum and vagina should reveal the broad ligament to be thickened. The absence of this finding rules out pelvic cellulitis.

A pelvic abscess following the abortion should have produced some mass or tenderness in some areas of the pelvis. There could have been an extension of the postabortal infection through the lymphatics into the peritoneum.

Thrombophlebitis certainly is a possibility, because on pelvic examination many times nothing can be palpated. And it happens that the vein most commonly involved is the ovarian. If the left ovarian vein were involved in the thrombophlebitis, a kidney infection could be produced because the left ovarian vein empties into the left renal vein. The thrombophlebitis could pass up the left ovarian vein into the left renal vein, into the kidney pelvis, and possibly into the rest of the kidney.

We could explain the peritonitis also by a blood stream infection from the thrombophlebitis. If we stick to this diagnosis of postabortal infection, the extension was through the lymphatics into the peritoneum.

The other possibility of infection is on the basis of a pyelonephritis. Pyelitis or pyelonephritis can accompany pregnancy. There may be dilatation of the ureter with stasis of urine during pregnancy. Infection can either ascend from the urethra or it can come from the lymphatics. It just so happens that the left ureter is usually infected first since it lies closest to the bowel.

If this is not a postabortal infection, how the kidney disease is related to the peritonitis is very difficult for me to explain. As far as etiological agents are concerned, *B. coli* is the most frequent in kidney infections. Staphylococci and streptococci are possibilities.

If this were postabortal, anaerobic streptococcus is the most common organism. It could be due to staphylococcus or to aerobic streptococcus, *E. coli*, or gonococcus.

The patient became worse and finally expired. Obviously, the bacterial infection was overwhelming. How did she die? There are two mechanisms for death from peritonitis. One is a toxemia due to bacterial toxin. Another is shock—the peritoneal tissue is damaged, with liberation of histamine or a histamine-like substance. This leads to dilatation of the capillaries and loss of fluids, resulting in progres-



sive circulatory failure due to a reduced venous return and a decreased cardiac output.

As for my final diagnosis, though the history is unsure, it certainly could be a postabortal infection. And I like the possibility of thrombophlebitis leading to a kidney infection, or to direct extension of the bacteria to the peritoneum. If we can't accept the history, I just can't explain how the infection led from the kidney into the peritoneum.

Dr. Delp: You think the patient had peritonitis, but you are a little indefinite about the pathogenesis? What is your best possible diagnosis?

Mr. Lee: Postabortal infection with peritonitis, and I believe the patient also had pyelonephritis.

#### CLINICAL DISCUSSION

Dr. Delp: I want to ask Dr. Critchfield just what he did find when he examined the patient?

Dr. Thomas Critchfield (gynecology and obstetrics): I saw this patient on one occasion, I believe the evening before she died. She was moribund at the time, apparently quite septic and toxic. I did only a rectovaginal examination with the patient lying in the bed, and I was unable to insert a speculum. We don't know anything about the appearance of the cervix nor whether there was evidence of a recent instrumentation, whether there was a discharge and, if there were a discharge, what the nature of it was.

Due to the rather marked distention and tension of the abdomen, it was impossible on bimanual examination to outline adequately the upper pelvic genitalia. However, we did note that the structures seemed to be pulled rather high; there was scarring in the region of the bladder base, and the picture to the examining finger was more that of an inflammatory process than anything else. By that, I mean tense, tender, tight uterosacral ligaments which were smooth. I didn't detect any definite localized masses.

I think the pelvic findings fit the picture of pelvic peritonitis. I say that, being unable to palpate anything higher up. We felt that the patient probably had a peritonitis.

Mr. Lee mentioned the possibility of a chronic gonorrheal salpingitis with tubo-ovarian abscess and rupture. Unfortunately, we do not have a very good history; particularly do we have a poor interval history between the time of this presumed spontaneous or induced abortion and the time when she apparently became acutely ill three or four days prior to her admission. I can only assume that she must have been well in the interval.

At any rate, if we assume that this patient was pregnant, I think that would be fairly strong evidence against a long standing gonorrheal type of pelvic disease.

Any time a patient misses periods, has subjective symptoms of pregnancy, and then bleeds, we must

think about abortion. I think we also have to consider ruptured tubal ectopic pregnancy, particularly when the patient comes into the emergency room in shock. However, only that suggests a ruptured ectopic pregnancy in this case. She did not have pain characteristic of ectopic pregnancy. Certainly, with a patient in shock, on the basis of a ruptured tubal ectopic pregnancy, I would have expected the red blood cell count to have been a little lower and the anemia perhaps a little more marked, even though she apparently was in a severe state of dehydration. Nor did I feel the typical mass.

We do not expect to find pelvic peritonitis, particularly on a bacterial basis, in a ruptured ectopic pregnancy; usually we are able to detect such signs of blood in the pelvic sac as a unilateral soft, doughy mass. We could not determine how tender this patient was because she was not reacting even to rather marked stimuli.

As far as the question of postabortal infection is concerned, I think that we can't say too much definitely about that possibility because we don't have adequate history.

I think we have ruled out a chronic salpingitis, at least for the time being.

What about an acute gonorrheal infection, postpartum? An acute gonorrheal infection postpartum usually arises as a surface infection, a gonorrheal salpingitis, and we usually expect those things to arise around the seventh day postpartum.

The septic postabortal pelvic infection, usually on the basis of an anerobic streptococcus, can very well begin in the endometrium, spread to the myometrium, and by way of the lymphatics and blood vessels into the paracervical and parauterine tissues where a localized abscess will be formed on rare occasions. The possibility of rupture into the peritoneal cavity is there. However, these infections usually manifest themselves about the third or fourth day and certainly not later than the fifth day postpartum. The patient usually has quite a lot of pain and typically but not always has a large tender uterus. Spiking fever begins, and it is quite obvious that the patient is ill.

If diagnosis is made and the patient properly treated, the infection may subside. However, if the patient is not treated or if the infection does not respond to the treatment instituted, we would expect such a patient to have remained quite ill, while the infection spreads through the myometrium and into the paracervical and parauterine tissues.

A pelvic thrombophlebitis on the basis of postabortal infection typically occurs on about the 12th to 14th day; occasionally we see a patient who is running a moderate spiking fever and suddenly, on about the 13th or 14th day, the illness becomes much worse.

I don't think I can reconcile that diagnosis to this

patient, who, I am assuming, was relatively well until three or four days prior to the onset of this rather rapid overwhelming infection, although I am frank to say that, without a history, I am a little bit at a loss.

We felt this patient had a pelvic peritonitis. We did not feel that we could definitely state that it arose on any focus within the pelvis itself. Looking back at the history, I think we could logically say that we would have to look elsewhere for the origin of the infection.

Dr. William Valk (urology): There are three very definite factors in this case that cannot be overlooked. First is that this patient had a far advanced generalized peritonitis; second, although there is a very suggestive story of an abortion some three weeks before admission, there was no pelvic abscess or mass present to indicate a primary suppurative infection in this area. Third, there were definite signs of left renal inflammation.

Of all the organs of the body, the kidney is one of the most available for diagnosis. Any infection in the kidney of any appreciable degree causes severe pain in the flank and particularly a severe pain in the costovertebral angle. This is a typical finding and is present if there is an infection of any degree in the kidney.

We can visualize the kidney. We can put a catheter up that kidney, obtain a specimen of urine from it, and determine whether or not there is infection emptying into the ducts of that kidney. We can make a pyelogram and see if there is any distortion of the normal architecture of the kidney. If we are concerned about the possibility of a carbuncle of that kidney or a cortical abscess of that kidney, that usually can be visualized by the dye. If we feel that we cannot put a catheter into the kidney, then we can make an intravenous pyelogram.

This woman demonstrated no renal insufficiency. The NPN, at least on one reading, was 50 mgm. per cent, and the chances are that we could have obtained at least some visualization by means of an exploratory pyelogram.

When there is suppuration in the kidney area, the perinephric area of the peritoneal space, there usually is absence of the psoas shadow on the right side. Dr. Tice can read a smaller contracted shadow on the left side, so that the possibility of a low retroperitoneal abscess probably is ruled out. There hasn't been enough fluid passing into the psoas muscle to make it transparent roentgenologically.

However, an abscess in the retroperitoneal area above the kidney or in the upper medial portion may not cause obscuration of the psoas shadow. In that case, there always is a fixation of the diaphragm on that side.

The best indication of perinephric inflammation and infection is the lack of mobility of the kidney. A breathing film usually is made, and if that kidney is fixed, we know that there has been enough inflammation around that kidney to prevent motion.

Also, there usually is some curvature of the vertebra with the concavity toward the affected side, and it is possible that there may be some in this film.

This woman, then, did have left renal suppuration. She had had numerous operations for the probable vesicovaginal fistula which could very well interfere with proper drainage of the left ureter.

It is extremely rare for a suppurating hydronephrotic kidney to rupture into the peritoneum—that's an almost unheard-of complication. It is almost unheard-of for a severely infected kidney, a kidney with severe pyelonephritis, to cause much intraperitoneal disease. True, there sometimes is ileus; there sometimes is nausea and vomiting. But the well defined signs of peritonitis are not present. This patient did not have an extremely high white count but, as Mr. Lee indicated, she was in a period of exhaustion and was not responding to such an overwhelming infection.

The third possibility for suppuration is a perinephric suppuration—a disease in the heavy capsule around the kidney which may come from a metastatic source, from a previous septicemia or bacteremia, with lodgement of bacteria in this poorly vascularized fatty area, and the development of a huge abscess in this part of the retroperitoneal space. This abscess also could occur from rupture of a small infected cyst or small abscess of the cortex into the fatty space.

Dr. Delp: Dr. Calkins, do you have any comments about the gynecological picture we have developed here?

Dr. L. A. Calkins (gynecology and obstetrics): Yes, I want to congratulate Mr. Lee on his analysis of this case. There is very little to add. Dr. Critchfield's remarks further limit what I might say. To me, it seems unlikely that an abortion had anything to do with the patient's illness. If the details as given in the history are correct, if she had the abortion three weeks before, the only possible way that it could be operative, as I see it, is in the way that Mr. Lee described.

Dr. Valk has pointed out that these infections in the kidney can lie dormant for a long time and then break out in the acute form. I wonder if the presence of this pregnancy that eventually was aborted might have served as a trigger mechanism to exacerbate a dormant kidney infection. I would doubt that the abortion had anything to do with it, but I think the pressures of pregnancy might have had something to do with lighting up the urinary tract infection. I'm not sure whether or not it reactivates perinephric infection, but it certainly can with kidney infections.



## PATHOLOGY REPORT

Dr. Ann Pollak (pathology and oncology): An incision into the abdomen revealed 1200 cc. of thin obviously purulent material. There were easily friable adhesions between adjoining loops of bowel, suggesting a relatively fresh peritonitis. Pressure on the left upper quadrant permitted a lot of thick purulent material to escape from the true peritoneal cavity. It appeared older than the exudate found in the pelvic peritoneal cavity.

The left kidney had been completely stripped free of its capsule and was floating in a sea of pus. This brought out the question of some communication between the perinephric abscess on the left and the peritoneal cavity. There was, in fact, such a communication. It was a sinus tract leading from the perinephric abscess on the left, beneath the sigmoid colon, and into the peritoneal cavity.

Most of the kidney had been dissected away from the surrounding tissue by the pus. The left ureter was dilated; the mucosa was thickened and reddened, and we ran into an obstruction on trying to enter the bladder. The bladder was shrunken and was surrounded by a great deal of fibrous tissue. As far as I could tell, the right ureter was even more obstructed than the left, but both of them were at least partly obstructed by the fibrous tissue surrounding the bladder.

The uterus showed no evidence of a previous pregnancy. We examined it carefully for evidence of instrumentation, and there was none. We could find no evidence of pregnancy, but that doesn't mean there had been none.

The pale liver was large and contained fat. The lungs showed some edema and some congestion.

Cultures from both the kidney and the peritoneal fluid contained aerogenes bacilli.

Microscopic examination of the tissues showed a long standing pyelonephritis of the left kidney, a perinephric abscess, and direct extension from the infected kidney of infection to the surrounding tissue.

The peritonitis was acute.

There was fresh hemorrhage in the central portion of the adrenal and necrosis. This is what we sometimes see in overwhelming infections.

The heart grossly showed a thrombotic non-bacterial endocarditis involving both the mitral valves and the tricuspid valves. Microscopically, an Aschoff-like body was apparent. Thus, this patient had two extra lesions. In addition to bilateral non-bacterial thrombotic endocarditis of the mitral and tricuspid valves, a pericarditis also was present. This would raise the question in everybody's mind as to whether or not this represented a terminal acute rheumatic fever. Nobody was willing to make this diagnosis on the evidence presented, but I believe that all who

looked at these slides agreed that this is the type of reaction that occurs, and it's a question of how much one has to have before putting a name on it—that name being acute rheumatic fever.

There is another lesion which I can't explain. That is dilatation of the pancreatic ascini. It occurs in 40 per cent of a group of 200 patients without uremia who came to autopsy from various conditions. To me, this is not uremia; however, the lesion is present.

Dr. Delp: One will have to admit that this case has a lot of interest and value as far as instruction is concerned.

There are some factors which have to do with management of this patient that we should not take time to discuss. I would like to have anyone comment on Mr. Lee's question as to whether terramycin and penicillin should have been used in combination.

Dr. Robert Weber (medicine resident): I think the patient needed something else besides the penicillin and terramycin.

Dr. Delp: What about the combination of terramycin and penicillin? Do you think antagonism might have developed?

Dr. Weber: It's possible. If this patient received massive doses of penicillin, I doubt if antagonism occurred.

Dr. Delp: I don't think we can answer that question. Something would have had to be done to obviate the terrific peritonitis she had, besides giving antibiotics. Perhaps, had we been able to start that treatment three or four days before, it would have helped. I am very certain that the two shots of penicillin the patient received three or four days before admission didn't do any good.

It would seem that the logical combination of antibiotics should have been penicillin and streptomycin. I think it is highly doubtful whether they would have combatted the infection this patient had and the peculiar manner in which the infection occurred.

## FINAL ANATOMICAL DIAGNOSIS

*Primary:*

Fibrosis and scarring with obstruction of both ureterovesicular junctions (history of cystotomy and bladder repair following lacerations during childbirth nine years ago).

Left hydroureter and hydronephrosis.

Bilateral chronic active pyelonephritis and ureteritis more marked on left.

Left perinephric abscess, with sinus tract from perinephric abscess to peritoneal cavity through the splenic flexure of mesentery.

Purulent peritonitis (1200 cc.).

Hyperplasia of the spleen.

Congestion and edema of the lungs.

Bilateral non-bacterial thrombotic endocarditis of mitral and tricuspid valves.

Focal myocarditis, slight.

Pericarditis, slight.

Focal dilatation of pancreatic ascini.

Recent wounds of ankles and forearms, bilateral (history of recent incisions for parenteral fluid injection).

Healed deformed scars at midline and right lower quadrant of abdomen.

#### *Accessory:*

Healed linear scars, lateral aspect of right thigh, and anterior aspects of both lower legs.

Arteriosclerosis of aorta, slight.

#### SUMMARY

Several confusing elements in the history, physical findings, and x-ray findings increased the difficulty in making a completely correct antemortem diagnosis. The spontaneous abortion occurring only three weeks prior to the onset of the illness obviously was misleading. Even though the record was clear as to several pelvic operations in an effort to correct a probable vesicovaginal fistula, the final implication of a hydronephrosis was not convincing.

That the patient had peritonitis seemed clear, but the origin from a perinephric abscess instead of a pelvic abscess was surprising. The classic distortion of the psoas muscle shadow in the flat KUB x-ray films was disappointingly absent.

In retrospect, the use of antibiotics might well have been different but of doubtful value in any combination. Infection remains a formidable danger, especially under such circumstances as these.

#### TUBERCULOSIS DEATHS DECREASE

Deaths from tuberculosis decreased substantially in Kansas during the period from 1940 to 1950, according to figures released recently by the National Tuberculosis Association. This state, in fact, ranked seventh among all the states in percentage decrease, being surpassed only by California, Colorado, Florida, Nevada, Washington, and Wyoming.

In 1940 there were 25.2 deaths from tuberculosis for each 100,000 persons living in Kansas. In 1950 the rate was 10.0, a percentage decrease of 60.3. The highest percentage of decrease, 69.5, was reported in Nevada.

The 19th annual meeting of the American College of Chest Physicians, held in New York City in May, surpassed all previous records for attendance. Dr. Charles F. Taylor, Norton, was re-elected governor of the college for Kansas.

#### HIGHLIGHTS OF 102ND A.M.A. CONVENTION

NEW YORK CITY, JUNE 1-5, 1953

One hundred eighty-seven delegates responded to roll call as this convention of the policy making body came to order. We were comfortably seated at long tables with folders furnished by W. B. Saunders Company to contain all stereotyped material. Eventually, with all resolutions and reports, this was more than two inches thick.

Important policy making resolutions included veterans' medical care, osteopathy, medical ethics, and intern training. The House elected Dr. Walter B. Martin of Norfolk, Virginia, president-elect. Dr. Alfred Blalock, chief of surgery at Johns Hopkins, was awarded the Distinguished Service Medal for outstanding scientific advancement. This was for his development of the so-called "blue baby" operation.

We took a firm stand on veterans' treatment of non-service connected disabilities. Briefly stated, the resolution asks that this be returned to private hospitals and doctors, with the exception of those suffering from tuberculosis and nervous and mental diseases, who cannot afford to pay for their own hospital care. All members should read the resolution passed and the recommendations when fully published in the organization section of the *Journal of the A.M.A.*

This first day was filled with addresses, announcements, and the presentation of 75 resolutions which were referred to various reference committees for hearings to be held on Tuesday. One of the longest reports was from a special committee on osteopathy with Dr. John Cline as chairman. More about this later.

A highlight of this day's session was a scholarly address by Mrs. Hobby, secretary of the reorganized Department of Health Education and Welfare. Her words were carefully chosen and showed that she had accurate information. Throughout, she adhered to President Eisenhower's philosophy of government. Briefly stated by him to us last December, the states and municipalities should govern as far as possible, and the federal government should augment those efforts only where necessary. She thinks we, American medicine, should find a way to supply modern medical services to all the people of this country. She hoped this could be done in an orderly, democratic manner. We thought it appropriate for her to call attention to the specific wording of the Preamble of our Constitution which reads, "Promote the general welfare." It does not read to provide for the general welfare.

Tuesday was devoted to committee hearings. My own committee had no assignments, so I attended two. The first, on the osteopathic question, was discussing what should be done with the Cline report. This was well written and showed that objectivity had



been used in its preparation. The question of osteopathy—"Is it a cult, or isn't it?"—arose out of the mists of differences and was debated hotly on the floor of the House of Delegates. When, after two hours of debate, the matter finally came to a vote, it was decided by a majority that it is still a "cult," and our ethics prohibit consorting or counseling with a cult. A continuing special committee study was urged with several specific objectives. These included ways for medical doctors to ethically teach in colleges of osteopathy. Also included was the request that the several states should handle the problem on that level.

The matter of international treaties interfering with domestic laws or rights was studied and objections were stated. The Board of Trustees was asked to implement these suggestions.

It should be remembered, however, that it is a real problem, and that this problem has been brought into focus by the legal rights of cultists to place patients in tax built and supported institutions. The problem has many other ramifications, but the legal rights vary so markedly from state to state that it seems impossible to apply a single over-all plan. We Kansans argued that osteopathy had not helped in raising our standards. In spite of this, we said we would do all possible within our ethics to elevate theirs; we could not yet condone legalized adulteration. We were relieved when this view prevailed.

There were 11 resolutions variously worded concerning the press interview of Dr. Paul Hawley, director of the American College of Surgeons, printed in U. S. News and World Report. He appeared in person before this committee and made a fine presentation of all of the facts. Among these were: first, that all of our leaders are giving lip service to the cleaning of our own house; second, this is one of the admitted evils which should be stamped out, and this can be done only by us; third, that freedom of speech and press cannot be impugned in our democracy without grave danger. His testimony was humbly given and did serve to refute many false impressions which had been extant. You may all read the resolution brought in by the committee and passed by the House when it appears in the *Journal of the A.M.A.*

This covers briefly the two most controversial subjects before the reference committees. Another highlight was the inaugural ceremony. The program included a beautiful symphony concert, the orchestra composed of 70 physicians. Next was the presentation of a half-hour radio show of "Dr. Christian," Jean Hersholt playing his usual part. The oath of office and Dr. McCormick's address followed. Concluding was a reception and ball.

Kansans may be proud that in the receiving line along with the officers of the A.M.A. were Dr. and Mrs. Leo J. Shaefer of Salina. Mrs. Shaefer has now

been installed as president of the Woman's Auxiliary to the A.M.A. We can all be proud, not only because Mrs. Shaefer is a Kansan, but also because she graces the office perfectly. This is, indeed, a heavy responsibility and a high honor, because there are now more than 62,500 members of the Woman's Auxiliary to the American Medical Association. Mrs. I. Joseph Waxse of Oswego, president of the Woman's Auxiliary to the Kansas Medical Society, made an excellent report of the activities of our state auxiliary and presented Mrs. Shaefer with a gift.

Now, a paragraph concerning the social activities. The stag dinner and entertainment put on by New York state and five boroughs was, indeed, marvelous. Every phase of the menu was superb. Three numbers of entertainment were presented and found to be highly superior. The daily Blue Shield Smorgasbord, cocktails and food, was timely, generous and very popular. Last, but not least, the annual auxiliary dinner was also a delight. It was addressed by Mrs. Ivy Baker Priest, treasurer of the United States. She extolled President Eisenhower in his unpopular role of budget trimming without immediate tax reduction. All of this was in the interest of sound economy in meeting commitments previously made. She and Mrs. Hobby are real parts of the Eisenhower team.

Finally, too little has been said about the scientific meetings of the various sections: color television teaching surgery as well as showing symposia on timely subjects; the review of that spectacular separation of the Brodie Siamese twins; the enormity of the scientific and technical exhibits at the Grand Central Palace. It was, indeed, stimulating and truly interested more than 17,000 physicians who had registered. It attracted 40,000 people to this great city.

May this report be a reminder to all Kansas members that we belong to the largest, most democratic, and the greatest medical organization on earth today. Its size cannot detract from individual interest. One can easily register and find through the program or the daily bulletin that in which he has a particular interest. With his A.M.A. badge, he has access to EVERY room from the committee hearings and the House of Delegates to the remotest rooms of the smallest specialty group.

Respectfully submitted,  
L. S. NELSON, M.D., *Delegate*

#### TEXTBOOKS FOR KOREA

Physicians who wish to send medical textbooks and medical journals to Korea for utilization of South Korean medical schools and hospitals are asked to make shipments, express collect, to Alameda Medical Depot, 2155 Webster Street, Alameda, California. Shipments should be marked "Kormeded."

## ACTIVITIES OF MEMBERS

Dr. Herbert C. Miller and Dr. Franklin C. Behrle, from the department of pediatrics at the University of Kansas Medical Center, presented a paper, "Changing Patterns of Respiration in Newborn Infants," before the American Pediatric Society at its May meeting in Atlantic City.

Dr. J. S. Reifsneider, Wichita, attended the International Congress of Otorhinolaryngology in Amsterdam last month.

Dr. Paul H. Lorhan, professor of anesthesiology at the University of Kansas School of Medicine, will conduct a course in anesthesiology in Spain in August. He has also been asked to speak on "Geriatric Anesthesia" before the American Society of Anesthesiologists at a meeting to be held in Seattle in October.

Recent appointments of county health officers, announced by their respective county boards of commissioners, include the following: Dr. R. R. Clutz, Bendena, Doniphan County; Dr. R. L. McAllister, Marysville, Marshall County; Dr. N. D. Harris, Liberal, Seward County, and Dr. E. R. Beiderwell, Leoti, Wichita County.

Dr. V. M. Winkle, director of local health services for the Kansas State Board of Health, Topeka, was speaker at a meeting of the Dickinson County Medical Society held at Chapman in May.

Dr. Thomas F. Morrow, Wichita, recently became a diplomate of the American Board of Psychiatry and Neurology.

Dr. Dennis A. Hardman, Smith Center, and Dr. Wendell K. Nickell, Osborne, who expect to be recalled to service soon, were guests of honor at a recent party given by Dr. and Mrs. Buford Hartman, Kensington, for members of the Smith County Medical Society and their wives.

Dr. John L. Lattimore, Topeka, who has served four terms as president of Kansas Blue Cross, was reelected to that position at a meeting held in Topeka late in May. Dr. H. Preston Palmer, Scott City, was named to the board of directors for the first time, and

three others were named to serve again on the board, Dr. A. L. Ashmore, Wichita; Dr. Thomas L. Hill, Arkansas City, and Dr. J. H. A. Peck, St. Francis.

Dr. Donald L. Rose, chairman of the department of physical medicine at the University of Kansas Medical Center, participated in a panel, "Rehabilitation in Arthritis," held as part of the annual session of the A.M.A. in New York City early in June.

Dr. Robert A. J. Shelley, Coldwater, completed 50 years in the practice of medicine on May 1. He has practiced in Coldwater for 29 years.

Dr. H. S. Dreher, Sr., Salina, announces that his son, Dr. Richard L. Dreher, has completed his second year of residency at the University of Kansas Medical Center and is now associated with the Mowery Clinic, Salina. A brother of the new physician, Dr. H. S. Dreher, Jr., also practices at the Mowery Clinic.

Dr. Daniel J. Hagan, who has been serving in the medical corps in Japan, has been released from the service and is now associated in practice with Dr. Newman C. Nash, Wichita.

Dr. William L. Valk, chairman of the section on urology at the University of Kansas Medical Center, was recently elected to membership in the American Association of Genitourinary Surgeons.

Dr. H. W. Lane, city-county health director for Kansas City and Wyandotte County, recently reported for active duty with the Army at Fort Sam Houston, Texas. During his absence Dr. L. B. Byington, assistant director, will serve as director.

Dr. Calvin Wartman, Ulysses, has begun a year's postgraduate work in surgery at the Pierce County Hospital, an affiliate of the University of Washington, at Seattle.

Dr. Franklin D. Murphy, chancellor of the University of Kansas, Lawrence, has been appointed to a one-year term on the Kansas Advisory Commission on Institutional Management by Governor Edward F. Arn. Dr. Karl A. Menninger, Topeka, has been named to a three-year term on the same commission. Dr. Clyde W. Miller, Wichita, was also appointed to the group.



Dr. James S. Johnson, Topeka, closed his office the first of the month to begin a residency in obstetrics and gynecology at the University of Kansas Medical Center.

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Dr. David Robinson, professor of surgery at the University of Kansas Medical Center, was recently elected to membership in the American Surgical Association.

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Dr. Evert C. Beaty, Parsons, was called to active duty with the Navy recently, reporting to Camp Miramar, California, in June.

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A discussion of cardiac surgery for treatment of congenital heart lesions and acquired valvular deformities was given by Dr. E. Grey Dimond, chief of the cardiovascular section of the University of Kansas School of Medicine, before the Topeka Society of Internal Medicine in May.

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Dr. Veryl Dean Schwartz, who has been serving in the Army medical corps in Korea, was recently released from the service and is now practicing in Wichita.

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Dr. Karl A. Menninger, Topeka, participated in a symposium on "The Meaning and Use of Diagnosis in Psychotherapy" at the annual meeting of the American Psychiatric Association in Los Angeles in May. Also participating in the program were Dr. William Roth, Jr., and Dr. Merril E. Eaton, of the University of Kansas Medical Center, and Dr. Edward D. Greenwood and Dr. Lewis L. Robbins, of Topeka.

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Dr. Robert R. Luttrell, director of the Shawnee Guidance Center, Topeka, for the past two years, resigned on July 1 to enter active duty with the Air Force. He reported to Gunter Air Force Base, Montgomery, Alabama, for a five-week orientation course.

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The Wichita Pediatric Society announces the election of the following officers: president, Dr. Thomas C. Hurst; vice president, Dr. Roy C. Knappenberger; secretary, Dr. Mary J. Blood; treasurer, Dr. Walter L. Schafer.

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Dr. Pratt Irby, who has been practicing urology in Fort Scott, has moved to Billings, Montana, where he is associated with the Billings Clinic.

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Dr. Laurel G. Case, Enterprise, reported for duty

last month at the Naval Air Station, Norman, Oklahoma.

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Dr. Henry S. Blake, Topeka, was elected president of the National Medical Veterans' Society at a meeting held in New York City last month at the time of the A.M.A. meeting. Membership in the organization now numbers 20,000.

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It has been reported that Dr. Glen Floyd, Winfield, who was recently recalled to the service, is now stationed in Korea.

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Dr. Clarence D. Kosar, Concordia, announces that Dr. Lindell C. Owensby is now associated with him in practice. Dr. Owensby recently completed a two-year residency in ophthalmology at General Hospital, Kansas City, Missouri.

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Dr. Dennis A. Hardman, Smith Center, was recently recalled to active duty with the Navy and reported for duty at Bainbridge, Maryland.

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Dr. Norman E. Hull, who has just completed internship at Menorah Hospital, Kansas City, Missouri, is now practicing in Hays in association with Dr. William M. Brewer, Dr. Lloyd W. Reynolds, and Dr. John C. Artman.

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Dr. Charles C. Dennie, Kansas City, was guest speaker at a recent meeting of the Montgomery County Medical Society. His subject was "Physiology of Antibiotics."

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Dr. Robert D. Hughes, who has been practicing in Frankfort for several years, has moved to Marysville and is now practicing there.

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Dr. Earl R. Beiderwell, Leoti, announces that Dr. John Martin is now associated with him in practice, specializing in obstetrics. Dr. Martin recently completed a three-year tour of duty in the Army, and for two years was in Iran as medical advisor at the American Embassy.

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Dr. Frederick Speer, Kansas City, was speaker at a recent meeting of the Lyon County Medical Society at Emporia. His subject was "The Common Cold."

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Dr. John M. Porter, Concordia, addressed the North Central Kansas Welfare Association, com-

prised of 19 counties in that section of the state, at a meeting held at Ottawa County State Lake on June 18. He spoke on social welfare, health, and education, and outlined the duties and objectives of the newly created cabinet post in Washington.

Dr. Warren F. Bernstorf, Winfield, immediate past president of the Kansas Medical Society, was principal advisor at the Health Education Workshop held at Lawrence, June 15-19. He stayed throughout the meeting and represented the Kansas Medical Society. Dr. Edward D. Greenwood, Topeka, served as chairman for the event.

Dr. John Waller, Halstead, announces that Dr. Marion Throckmorton, who was recently released from service with the Navy, is now associated with him in the practice of urology at the Hertzler Clinic.

Dr. Charles F. Haughey, Tribune, began a year's postgraduate study in surgery in Chicago on July 1. Dr. Richard N. Todd, a graduate of the University of Kansas School of Medicine who recently completed a tour of duty with the Navy, is taking over Dr. Haughey's practice.

Dr. O. C. Lowe, Paola, announces that Dr. Jack Rowlett and Dr. Rex Stanley are now associated with him in practice.

Dr. Richard J. Ohman, Dodge City, addressed the Kiwanis Club there recently on two subjects reported in the *Reader's Digest*, excessive use of antibiotics and alcoholism.

Dr. Charles E. Vestle, Humboldt, was speaker at a recent dinner meeting of the Allen County Medical Assistants' Society. Guests at the meeting were employees of the Randles Clinic and the Fort Scott Clinic.

Dr. James A. Wheeler, Newton, attended the A.M.A. meeting in Atlantic City last month and presented, by request, his exhibit on the relationship of the types of sleeping sickness that attack man and animals. He was also asked to present the exhibit at a medical meeting in Toronto, Canada, this month.

Nearly 28 per cent of the entire population of this country, more than 44,000,000 people, are now enrolled as members of Blue Cross, according to a recent report of Richard M. Jones, director of the

Blue Cross Commission of the American Hospital Association. A record-breaking \$570,000,000 in benefits was paid to hospitals by Blue Cross in 1952, representing 88.5 per cent of income. National average operating expense was reduced to 7.64 per cent.

## DEATH NOTICES

LOUIE FRANK BARNEY, M.D.

Dr. L. F. Barney, 76, a past president of the Kansas Medical Society and of the Wyandotte County Medical Society, died at his home in Kansas City on June 1. He had retired from practice after suffering a heart attack in December, 1951.

He began practice in Kansas City after his graduation from the Kansas City Medical College in 1903 and a year's internship at St. Margaret's Hospital. During World War I he served in the Army medical corps. In 1921 he joined the faculty of the University of Kansas School of Medicine as an assistant in surgery, and he later served as assistant professor and associate professor.

In addition to his service to medical societies, he was an active member of other professional organizations, a diplomate of the American Board of Surgery, a fellow of the American College of Surgeons, and a member of the Western Surgical Association.

ELLIS AUSTIN EVANS, M.D.

Dr. E. A. Evans, 76, an honorary member of the Tri-County Medical Society, died at his home in Conway Springs on May 30. He had been in active practice until suffering a stroke five weeks before his death. A graduate of Beaumont Hospital Medical College, St. Louis, in 1901, he began practice in Conway Springs that year, and had served the community continuously since that time. He had been a physician for the Missouri Pacific Railroad for almost 40 years.

WILLIAM EBENEZER CURRIE, M.D.

Dr. W. E. Currie, 81, who had practiced in Sterling since 1900, died there on June 5. He had been in poor health for more than a year. He was a graduate of Kansas Medical College, Topeka. For 25 years he served on the board of trustees and executive committee of Sterling College. Dr. Currie was an honorary member of the Rice County Medical Society.



# Management of Acute Renal Shutdown\*

W. Jack Stelmach, Senior Student

University of Kansas School of Medicine

*Definition:* The term "renal shutdown" is used to denote the inability of the kidney to perform adequately in the formation of urine, excretion of products of catabolism, maintenance of water and acid base balance, and the regulation of essential materials in the relationship to osmotic equilibria.

In this presentation, the discussion will be limited to those cases which, prior to the development of acute renal shutdown, had essentially normal kidney function. Acute Bright's disease, acute nephritis, acute tubular nephritis, prerenal azotemia, lower nephron nephrosis, traumatic kidney, crush syndrome, and shock kidney are some of the common names given to the syndrome of acute renal insufficiency.<sup>1</sup>

Numerous factors have been implicated in the production of this state, including sensitization of kidney parenchyma to bacteria, drugs and other agents, shock state, burns, crush and blast injuries, hemorrhage, incompatible blood transfusions, acidosis and alkalosis, heat stroke, surgical intervention (reflex anuria), various hemolytic diseases, poisoning from various chemicals such as arsenic, mercury, carbon tetrachloride, and many other agents.<sup>2, 3, 4</sup>

In reviewing the pathogenesis and pathological features of this syndrome, one finds diversity of opinion in interpretation and description of the lesions involved. The kidney tubules have almost always been implicated, although varying somewhat as to the portion of the tubule involved and the degree of involvement. Cloudy swelling, degeneration, and necrosis of tubular cells, with frequent association of intratubular debris or casts, is the common descriptive microscopic lesion. Glomeruli showing slight swelling of the glomerular capsule are not infrequently described. The pathological physiology has been variously ascribed to renal vasospasm from toxic, hormonal, or neurogenic mechanisms, reduction of renal blood flow by shunting mechanisms and by nephrotoxins. Macgrath<sup>5</sup> et al. have suggested the term "renal anoxia syndrome" because of their strong belief that renal anoxia is the common factor in all these cases.

Inasmuch as the lesions are commonly tubular necrosis or degeneration and are not altered by any direct means and, moreover, are dependent upon

the regenerative capacity of each individual, we are faced with the problem of promoting optimum conditions in order to maintain a physiological state necessary for regeneration, without the assistance of adequate renal function. Tubular regeneration usually starts after 10 days; therefore, every possible means of maintaining life should be employed during the critical period of from 10 to 14 days after anuria by oliguria has started.

## MANAGEMENT

Dietary measures have long been considered one of the most important factors in promoting recovery. Considerable change in these views has occurred in the past 50 years. An entirely milk diet in considerable quantities was considered the diet of choice until 40 years ago, at which time Strauss and Widal demonstrated that edema and anasarca became evident or increased because of the high salt content of milk. They further showed that the non-protein nitrogen substance in the serum of uremic patients became greatly increased because of the high protein value of milk.

In 1935 Volhard<sup>6</sup> recommended a starvation diet consisting only of 800 cc. of fruit juice. He theorized that the kidneys should rest to speed their recovery, and that all substances normally excreted by the kidney, including water, should be minimal. In the past few years the starvation diet has been criticized on the basis that a low caloric intake promotes or increases the breakdown of body protein, thereby further increasing the azotemia already present. Another criticism raised was that fruit juices contain large quantities of potassium, and greater quantities of potassium were released in the serum when endogenous protein breakdown occurred.

It was for these reasons that many clinicians suggested a diet high in carbohydrates and fat, and low in protein and salt. Borst,<sup>7</sup> in 1948, introduced such a diet consisting of 200 grams of butter and 200 grams of sugar. The butter is melted and then mixed with the sugar and about 12 grams of flour and coffee flavor. It is then chilled and served like candy in the form of separate sticks or balls containing about 50 grams of the mixture.

All sorts of modifications<sup>8</sup> have been made since the original; however, many patients still seem to have difficulty tolerating 400 grams of this mixture daily. It has been suggested that persuasion and a complete explanation of the necessity for its use

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

would help the patient tolerate this diet. Borst has demonstrated that the diet will enable the patient to produce only 4 grams of urea a day, in comparison to 20 grams per day on a starvation diet. He further calculates that a patient without kidney function should live five times as long on this diet as a patient on a starvation diet.

Snapper<sup>9</sup> and Stock<sup>10</sup> were unable to show any significant difference between survival rates of patients on starvation diets or the more liberal low salt, low protein diets. At present, the use of the Borst diet or any similar diet seems to be indicated, not so much because of its propensity for prevention of azotemia where the serum levels have been shown to have no direct relationship to recovery, but because of its prevention of high serum levels which have been proved to be toxic, and the fact that patients seem to feel somewhat better when serum non-protein nitrogen substances are low.

For the reasons just mentioned, infection should be avoided. Prophylactic use of antibiotics should be of some benefit. Sulfonamides should be avoided because of the already existing renal parenchymal damage.

#### CONTROL OF WATER AND ELECTROLYTE BALANCE

If oliguria or anuria exists, the fluid intake should not exceed that lost by insensible perspiration until there is evidence that the kidney will respond to a greater intake by excreting a greater volume of urine. In the average 70 Kg. man, under conditions of room temperature, no fever, no diarrhea or vomiting, 750 cc. of water daily has been demonstrated by Gamble<sup>11</sup> to be sufficient to prevent body water loss. Fluids lost by excessive sweating, vomiting or diarrhea, and excretion of urine should be carefully calculated and replaced. An intake and output chart must be rigidly kept, including the exact measurements of any fluids given or lost. In the past, when fluid and electrolyte control was not adequately appreciated, a great many patients with anuria or oliguria were overtreated with various fluids, particularly salt solution, in the hope that diuresis would occur; however, this resulted in prolonging the morbidity and, in many cases, produced hypertension, cardiac failure, convulsion, and pulmonary edema which was fatal. In those patients who have been subjected to an excess of various intravenous infusions or transfusions, venesection should be done and 500 to 750 cc. of blood removed to avoid the complications mentioned above.

In the regulation of electrolytes, a knowledge of the concentrations of these substances present in the various body fluids is essential in order to replace correctly those electrolytes lost by the various routes. If there is access to a flame photometer, which can

accurately and rapidly measure the electrolytic constituents of the lost body fluids and serum levels (repeated or daily levels), the problem of replacement is easier. This also gives a better idea as to how the patient is maintaining his electrolyte balance. It is known that occasionally the laboratory picture may be misleading; however, in most cases it is definitely of great benefit. Careful clinical observation cannot be overemphasized. Excessive sweating, vomiting, and diarrhea can cause large quantities of sodium chloride to be lost. Solutions containing equivalent amounts of these substances can be easily made up and then replaced by oral or intravenous administration.

Hyperpotassemia<sup>12, 13</sup> frequently occurs and has been reported to be one of the leading causes of death. This is brought about by massive cellular destruction after injury and tissue breakdown that occurs during starvation, leading to the release of great quantities of potassium which cannot be excreted. This can be detected early by such EKG changes as high peaked T waves, QRS slurring and broadening, disappearance of P waves, bradycardia, and finally various arrhythmias. Hyperpotassemia can be corrected by high caloric and carbohydrate diets which tend to promote the intake of potassium by the cells, administration of various exchange resins, which fixes the potassium in the bowel, or by various dialyzing procedures which will be mentioned later.

Hypocalcemia, which frequently occurs after rapid correction of acidosis, may produce nocturnal cramps or tetany and can be easily corrected by the administration of calcium gluconate, either by oral or intravenous administration. Hyperphosphatemia, which is commonly associated with hypocalcemia, has been treated by aluminum hydroxide gel given by mouth.

Mild acidosis can be prevented by the maintenance of a high caloric intake. Gamble<sup>11</sup> demonstrated that 100 grams of glucose per day was sufficient to prevent ketosis. If acidosis becomes severe, with the  $\text{CO}_2$  combining power falling below 25 volume per cent, sodium bicarbonate should be given. One should not exceed 10 to 12 grams per day because of the quantity of base present.

Results obtained by the management just discussed did not always prove satisfactory. For this reason, various methods for reducing the levels of retention products from the blood of anuric patients were introduced. These methods consist of continuous dialysis of blood, either by way of an artificial kidney or by continuous lavage of the peritoneal cavity or small intestine. Other methods consist of replacement transfusion and cross or exchange transfusions. These procedures are applied in the hope that by cleansing the blood of the anuric patient, life



can be maintained until the kidney tubules have regenerated and diuresis has been restored.

#### ARTIFICIAL KIDNEY<sup>14, 15, 16</sup>

The principle of the artificial kidney consists of the passage of the patient's blood, which has been rendered uncoagulable by heparin, through a cellophane or cellulose-acetate tube which is submerged in a bath water containing various electrolytes. The concentrations of these electrolytes are so calculated as to be isotonic, or nearly so, with that of normal blood. Any differences of concentration will establish a gradient which causes diffusion of electrolytes either into or out of the semi-permeable tubing at the same time non-protein nitrogen substances are continuously diffusing from the blood into the bath water until equilibrium is established, thus favoring electrolyte balance and also ridding the blood of considerable quantities of urea, creatinine, uric acid, indican, and xanthoprotein substances. Kolff, who has had considerable experience and has popularized this method, used a dialyzing fluid containing 0.6 per cent NaCl, 0.4 per cent KCl, 0.2 per cent of  $\text{NaHCO}_3$  and 1.5 to 2 per cent of glucose. His bath water does not contain calcium because this would be precipitated by the  $\text{NaHCO}_3$ . Since considerable amounts of calcium are lost, calcium gluconate must be repeatedly injected intravenously during the procedure. Glucose is added in order to make up for the osmotic pressure of the plasma protein. In patients with edema, the glucose withdraws fluid from the plasma and at the same time serves as a caloric intake.

Results have not been overwhelmingly successful. Up to 1949, only 11 cases were reported as successfully treated by this method. The question is always raised as to whether these patients would have recovered spontaneously. The evidence appears to indicate that the artificial kidney did benefit or at least temporarily improve these patients; however, no definite conclusion can be made until after many more trials. It is true that in many cases this method was used as a last resort, thereby not giving it a fair trial under conditions which would be more favorable.

*Peritoneal Dialysis:*<sup>17, 18</sup> Frank, Seligman, and Fine revived peritoneal lavage as a treatment for uremia in 1946. The principle is similar to that of the artificial kidney; however, the peritoneal membrane acts as the dialyzing membrane. Solutions similar in composition to the bath water of the artificial kidney can be used. Until 1948 there were 34 reported patients treated by this method, of whom 9 recovered. By 1949, 21 cases were reported to have been successfully treated by this method. Even though this procedure is simpler and has the advantage of not handling the patient's blood, it has been generally abandoned after repeated trials in many med-

ical centers. This was because mechanical difficulties frequently prevented drainage of the peritoneum, thereby causing difficulty in controlling water and electrolyte balance, and frequent development of fatal peritonitis, abdominal colic, and meteorism.

*Intestinal Irrigation:*<sup>19, 20</sup> This method differs from the previous two procedures in that the dialyzing membrane is the small intestinal mucosa, which has specific absorbing qualities. It has been shown that lavage of the colon or stomach has no value in removing urinary retention products from anuric patients. Intestinal lavage presents more difficulty in the preparation of a rinsing fluid which will not upset the water and electrolyte balance. It is extremely difficult or impossible to predict how the mucosa of a certain patient is likely to react. If intestinal irrigation is done, constant supervision of the blood plasma electrolytes is necessary. To prevent fluid absorption, solutions are made moderately hypertonic. This can be done by adding sucrose or glucose ureide, magnesium sulfate, sodium sulfate, or a combination of all the substances. Equilibrium tends to be established with a solution containing 24 meq. of sodium, 24 meq. of bicarbonate, 5 to 6 meq. of potassium, 5 meq. of calcium, and 10 meq. of chloride. Irrigation of the entire intestinal tract, an isolated portion fixed by surgical means, or the use of one or two Miller-Abbott tubes, are some of the techniques used for this procedure. Reported successful cases to date have been scanty. Failures are attributed to the mechanical difficulties encountered, intestinal paralysis, and the great problem of keeping the Miller-Abbott tubes down for the proper length of time because of the common symptoms of nausea and vomiting.

*Replacement Transfusions:* Bessis<sup>21</sup> and Bernard introduced this method in treating patients suffering from leukemia. It has also been used extensively in newborns suffering from erythroblastosis fetalis. Bessis has introduced this method to improve the condition of uremic patients. This procedure consists of infusing a large volume of fresh blood in one arm while at the same time an equal volume or more blood is removed from the opposite arm. It is easy to calculate how much urea or other retention products can be removed. For example, if the blood urea is 300 mgm. per cent, the removal of one litre of blood would remove 3 grams of urea.

The advantages of this method in comparison to the other methods are that all toxic substances are removed whether dialysable or not, it will improve the protein, water, electrolyte content of the plasma, and it does not cause hemolysis. It has been further emphasized that the replacement of fresh blood is not only a substitute measure but actually plays a resuscitation role in promoting better organ func-

tion. This is the opinion of various French authors who believe that the blood of anuric patients is full of toxic retention products which inhibit the functions of different organs. The advocates of the other methods criticize the fact that huge quantities of blood must be used to remove the same amount as by the dialyzing methods. Other criticisms are blood reactions and the problem of obtaining large quantities of blood, particularly of the rarer types.

*Exchange or Cross Transfusions:* This procedure is done by exchanging equal amounts of blood between anuric and healthy patients at the same time, thus allowing the healthy individual to perform the necessary kidney function until improvement of the anuric patient occurs. This method has been practiced successfully in dogs for many years. It has been shown that the urinary retention products of anuric dogs could be reduced to half within a few hours. This method was abandoned after Salisbury,<sup>22</sup> who carefully studied this procedure, tried it on human beings. Unfortunately, one healthy donor who was transfused to a nephritic patient developed an incurable blood dyscrasia and died. No clinical trials have been done since.

#### SUMMARY

The conservative management of acute renal shut-down has been briefly discussed. Use of the Borst diet or any similar diet which is low in protein and salt and high in calories is recommended to prevent body protein breakdown, hyperpotassemia, and acidosis. Prevention of infection by prophylactic use of antibiotics is recommended for the same reasons. The restriction of water intake to 750 cc., plus adequate replacement of any fluids over and above that lost from insensible perspiration, makes for good fluid control. Electrolyte regulation is made easier by daily laboratory tests on serum levels of electrolytes and CO<sub>2</sub> combining power. Fluids and electrolytes lost by various routes, such as from vomiting or diarrhea, should be counterbalanced daily. If patients have been overtreated with various fluids, a blood venesection with removal of 500 to 750 cc. of blood is recommended to prevent complications that occur whenever the cardiovascular system is overloaded.

The heroic measures of treating acute renal shut-down, such as artificial kidney, peritoneal lavage, intestinal irrigation, replacement and cross transfusion, have been briefly discussed. The results have not been overwhelmingly successful. No final conclusions can be made until more clinical trials have been made, particularly in patients who are not completely hopeless in prognosis.

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## MEDICAL PROGRAM ON TV

A new 26-week series of five-minute spot television programs, entitled "M.D." and produced by F. William Hart in co-operation with the A.M.A., began on Monday, June 1, over all 45 stations of the NBC-TV network. The series is presented as a public service by the National Broadcasting Company and E. R. Squibb and Sons.

The program, featuring helpful health advice brought by "your family physician and his county medical society," is presented as a five-minute portion of the Dave Garroway "Today" show every Monday morning from 7:00 to 9:00.

The Squibb advertising on the program will be limited to an institutional message. Whenever the programs are televised locally, the county medical society will be invited to approve local sponsors.

Patronize JOURNAL advertisers. The patronage of Kansas physicians will assure advertisers that their support of this publication is appreciated.

Three out of four traffic accidents happen in clear weather on dry roads.



## THE KANSAS PRESS LOOKS AT MEDICINE

### Public Needs to Learn More About Medicine

The other day in Emporia, a group of Kansas doctors sat down with a group of Kansas newspapermen and hashed over a mutual problem: How to get more and better medical news in print.

The meeting was unusual because doctors and newspapermen, despite personal friendships, have developed a mutual distrust and they have a basic conflict of interests which, until now they have considered insurmountable.

The conflict is understandable. A newspaper wants all the news it can get within, of course, the bounds of decency. It wants the who, what, when, where, why and how, of every story.

The doctor is bound by his code of ethics to protect the privacy of his patient and to shy away from any personal mention which might be mistaken for advertising.

As a result, the doctor won't answer a reporter's questions and that makes the reporter mad; or if the reporter does find some way to finagle the information and it gets into print, the doctor considers it treachery and he gets mad.

This state of affairs has done nothing for the profession of journalism. All it has done for the profession of medicine is provide a bigger backlog of hypertension and ulcer cases. So any effort to recognize this conflict and find grounds for mutual agreement and compromise between the two professions, is laudable.

The doctors in the Emporia meeting were heart specialists and their immediate concern is the dissemination of information about heart disease. Partly, they want this in order to meet the financial needs of the Kansas Heart association which needs money for its research, training and information programs.

But, giving the doctors their full due, the chief interest is in saving lives. Presumably the publicity given a fatal automobile accident impresses upon drivers, if only momentarily, the importance of driving carefully. Presumably, if attention were focused more upon heart attacks, readers would be prompted to give more thought to their hearts, get a physical checkup more often.

Doctors frankly want to tell the public more—more about diseases, their symptoms, their cures. As one doctor at the Emporia meeting put it: The old fashioned doctor who took the "papa knows better attitude," and never said anything, is on the way out.

But the doctors still have their fears about newspapermen. They're afraid facts will be distorted, readers will get wrong impressions, or that propriety will be violated by giving the doctor too much advertising or invading the patient's privacy.

If the interest is there, however, these fears are groundless. If the grumpy old doctor, who didn't believe the public deserves any medical information, is on the way out, so is the hell-for-leather reporter who wanted a story no matter whom it hurt.

It is true most Kansas newspapers are too small to afford a specialized medical reporter. But the general reporter, if he has the advice and guidance of members of his medical society, can write the most complicated story correctly and intelligently.

The matter of patient privacy is probably not as serious as the doctors think. Usually, if the trouble is taken to ask the patient, he will consent to a story about him and his disease. People like to get their names in the paper. This usually is true whether they have exhibited the biggest turnip at the county fair, or grown the biggest tumor in Southwest Kansas.

People are news. And people who have had the experience of sickness with all its hardships and pathos, and the experience of being healed at the hands of skilled and dedicated doctors, with all the attendant miracles of medicine, are as important and interesting news as any in the community.

Nearly every disease has a national headquarters these days. Reams of publicity are ground out and sent to newspapers. Most of it goes in the waste baskets of editors whose desks are swamped every morning with all kinds of propaganda handouts. But there is a local story about every disease too and no editor worth his salt will ignore it.

A wordy release about cardiacs from the New York office of the American Heart association is never as interesting as the story of the town banker who is back at his desk after a heart attack because he did what his doctor said and his doctor performed some of the miracles of modern medicine. His neighbors would enjoy reading about it, and would profit from his story.

Some doctors at the Emporia meeting said they were going home and invite their local editors to the next medical society meeting to talk this thing over. This is the most encouraging sign since the Panmunjom truce talks began.—*John McCormally, Hutchinson News-Herald, May 19, 1953.*

### A New Doctor

There was quite a celebration the other night in Weir, a small town in northern Cherokee County. Four hundred citizens were present, the high school band gave out with music, and numerous speeches of welcome were on the program.



1. *Dizziness . . . movement is within the head.*
2. *Objective vertigo . . . the environment is in motion.*
3. *Subjective vertigo . . . the patient himself moves in space.*



2



3

## TYPES OF VERTIGO:

*Their symptomatic relief with Dramamine®*

The disagreeable sensations of dizziness which physicians are frequently required to explain to patients have been described by Simonton<sup>1</sup> as varying from a slight sensation of confusion to severe vertigo.

While dizziness or giddiness is classified as a sensation of unsteadiness with a feeling of movement within the head, in vertigo the environment seems to spin (objective vertigo) or the body to revolve in space (subjective vertigo). Labyrinthine disturbances are likely to cause a sensation of rotation. Among the more common causes of dizziness or vertigo, this author lists: Damage to the vestibular nuclei or tracts in the central nervous system, involvement of the vestibular end organs by disease of the ear, Ménière's disease, toxicity of drugs, ocular

vertigo from sudden diplopia, visual field defects, looking down from heights and motion sickness due to hyperactive labyrinthine reaction from riding in vehicles.

Dramamine (brand of dimenhydrinate) has proved effective in treating many of these disturbances. The indications for which Dramamine is now Council accepted include: Motion sickness, the nausea and vomiting associated with pregnancy, certain drugs, electroshock therapy and narcotization; vestibular dysfunction associated with streptomycin therapy; the vertigo of Ménière's syndrome, hypertensive disease and that following fenestration procedures, labyrinthitis and radiation sickness.

1. Simonton, K. M.: The Symptom of Dizziness, Arizona Med. 6:28 (Sept.) 1949.

**SEARLE** *Research in the Service of Medicine*



It was not a new industry, a highway improvement, a new school or the town's anniversary which Weir noted with an outburst of music and oratory. Rather a high pitch of enthusiasm was reached over the arrival in town of a new doctor.

Small towns have been losing doctors to larger cities in recent years. Loss of medical service is a real blow to any community and as with anything else, it is not truly appreciated until there is none to be had.

The trend in Kansas fortunately is being reversed. Primarily because of the state's rural health program, doctors are being induced to locate in small towns where there is ample opportunity for service to humanity and to the profession.

But many towns still are without doctors and the shortage may continue some years. It is an occasion for civic celebration when a town lands a doctor nowadays, and Weir simply was following a natural inclination when it turned out with the band to give the glad hand to a professional man who had chosen to practice in the community.—*Parsons Sun*, May 18, 1953.

## ANNOUNCEMENTS

An institute on teaching and improving esophageal speech will be held in Cleveland, August 10 through 16, at the Cleveland Hearing and Speech Center. This institute, the second on voice pathology, is sponsored by the American Cancer Society, the National Cancer Institute, the Office of Vocational Rehabilitation, the Cleveland Otolaryngological Society, the Cleveland Academy of Medicine, and Western Reserve University School of Medicine.

Non-speaking laryngectomized persons are invited to attend without charge. They may be sent by surgeons, cancer societies, societies for crippled persons, and rehabilitation services. Surgeons, speech pathologists, and lay persons are also invited to attend the sessions, but registrations will be limited.

Applications are to be addressed to Warren H. Gardner, Ph.D., 11206 Euclid Avenue, Cleveland 6, Ohio.

The 18th Annual Congress of the United States and Canadian Sections of the International College of Surgeons will be held at the Waldorf-Astoria, New York, September 13 through 16. A session open to the public will be held on September 13, with sessions on colo-proctology, neurosurgery, obstetrics and gynecology, occupational surgery, ophthalmology, orthopedic surgery, otolaryngology, plastic surgery, and urologic surgery following.

Approved residencies under the supervision of Washington and St. Louis University Schools of Medicine, St. Louis, Missouri, are available at the Veterans Administration Hospital, Jefferson Barracks, Missouri. Training is fully accredited by the American boards of each specialty, and salaries, depending on previously approved training toward board requirements, range from \$2,640 to \$3,300 per annum.

Communications regarding the residencies may be addressed to the Manager, Veterans Administration Hospital, Jefferson Barracks, Missouri.

## NEW VIRUS RESEARCH LABORATORY

Highly hazardous and infectious diseases are now being studied at close range in a new virus research laboratory built by Parke, Davis and Company in Detroit. In the specially designed building, one of the few of its kind in the world, scientists are conducting experiments involving polio, "Q" fever, the common cold, mumps, measles, Japanese "B" encephalitis, equine encephalomyelitis, and other infectious diseases.

The unit is made up of five rooms which can be sealed off and decontaminated easily. A special finish on the walls allows steam or disinfectant sterilization. Isolation units are provided for several thousand animals to eliminate cross-infection. There are special ultra-violet hoods under which scientists work on eggs and cultures, and air is exhausted with high-pressure steam.

Major projects include the study of chemotherapeutic agents for infectious diseases, new vaccines for the immunization of human beings, and fundamental research on the nature of various viruses.

## RESIDENT WINS TRAINEESHIP

Dr. Francis Lohrenz, a resident in the Department of Medicine at the University of Kansas Medical Center, has been granted a \$3,600 traineeship in metabolic diseases from the National Institutes of Health, Bethesda, Maryland, effective July 1.

Official records show that alcoholic beverage consumption in the United States has increased 124.6 per cent from 1934 through 1952, declares the American Business Men's Research Foundation, making public an appraisal of records since the repeal of the 18th Amendment. During this period the consumption of alcohol has gone from 0.53 gallons per capita in 1934 to 1.39 gallons per capita in 1952.

Although there has been some fluctuation during the past 18 years, beer consumption, which was only 7.90 gallons in 1934, has made an increase of 115 per cent, to 16.95 gallons in 1952.

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
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## BOOK REVIEWS

*Psychology of Physical Illness: Psychiatry Applied to Medicine, Surgery, and the Specialties. Edited by Leopold Bellak. Published by Grune and Stratton, Inc., New York City. 243 pages. Price \$5.50.*

The book is meant to apply psychiatric insight to medicine, surgery, and the other specialties. The psychiatric aspects of general practice, internal medicine, malignancy, general surgery, plastic surgery, gynecology and obstetrics, genital urinary system, orthopedics, ear, nose and throat, neurology, pediatrics, dermatology, and dentistry are discussed. There is a chapter on the personality of the physician as a factor.

The book is meant to be read as a whole and then used as a reference work for the various specialties. Probably its greatest weakness is its use of psychoanalytic terminology and concepts which make it difficult for the non-psychiatrist to understand and accept. Another possible weakness of the book would be the tendency of the specialist to read only the chapter involving his own practice.

If the non-psychiatrist is able to accept the psychoanalytic interpretations, the book then becomes a lucid, well-written work which gives the specialist and general practitioner a great deal of insight into the psychological aspects of the practice of medicine.—*P. C. L.*

*Scientific Principles in Nursing. Second edition. By Esther McClain. Published by C. V. Mosby Company, St. Louis. 449 pages. Price \$3.50.*

Miss McClain states that the "purpose of this book is to show how some of the basic scientific principles may be used in nursing practice." Beginning with an orientation to nursing in the hospital and the community, the text concentrates on fulfilling its purpose by introducing scientific principles into discussion of common nursing measures. At times the device of labelling certain principles "sociology" or "pharmacology" or "physics" seems slightly contrived, and often the discussion is too superficial to be of value. The chapter on diagnostic tests, however, is particularly well arranged and appears to be excellent. The check list at the end of each chapter has value for the student and instructor in encouraging self-evaluation.

The book is well supplied with diagrams and line drawings which will not readily be outdated. The printing is easily read, and concepts are briefly and clearly stated. The placement of references at the

back of the book rather than following each chapter seems an awkward device, but may avoid distraction.

This book would appear to be of value as a reference work for students and instructors.—*H.*

*Psychiatric Aide Education. By Bernard H. Hall. Published by Grune and Stratton, Inc., New York, New York. 168 pages. Price \$5.75.*

This cloth bound volume is a report of an experiment in the education of psychiatric aides conducted by the Menninger Foundation in co-operation with the Topeka State Hospital from October 3, 1949, to June 30, 1952, under a grant from the Rockefeller Foundation.

The report consists of an introduction by Dr. Karl Menninger, the author's preface, an introduction to the experiment, then 11 chapters dissecting the total project. There are 21 references and a lengthy bibliography and nine appendices—one of which included the course outline.

In the conclusion, the authors indicate that the experience of conducting a psychiatric aide school has provided them "with more definitive answers to the question of *how* to train psychiatric aides" but "could not yield definitive answers to the questions—*how much* of *what material* should be taught and to *whom*. The authors feel further effort is needed on the part of psychiatrists and nurses, both locally and nationally, to evolve a skilled and stable group of psychiatric aides to assure the betterment of the care of the psychiatric patient.

*The Epidemiology of Health. Edited by Iago Galdston. Published by Health Education Council, New York Academy of Medicine, New York City. 197 pages. Price \$4.00.*

This book is based on the Eleventh Annual Eastern States Health Education Conference. With Dr. Iago Galdston as the editor, different men have written various chapters.

The evolution of the epidemiologic theory is traced, showing that initially the approach was in the study of infectious agents. This was followed by the ecologic concept of mass disease in which a content of epidemiology beyond the communicable diseases was recognized. With mass disease interpreted in terms of ecology, the principles of prevention and control became evident. Epidemiology, in company with science generally, is always in search of advanced conceptual ideas. So there has developed the conception of an epidemiology of health.

The application of the concept of the epidemiology of health in clinical medicine, in public health, and

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in health education must yield effective results. The book shows how health can be propagated and presents the concept of the healthy mass. It offers practical suggestions on how the objective of health in the mass can be effectively achieved.

The armed services and intelligent industry make a strong point when they emphasize the importance of health maintenance. One chapter tells how the Army practices the epidemiology of health, while another chapter describes the epidemiology of health in industry.

The book shows how the epidemiology of health may extend into areas of individual and community health in chapters relating to tuberculosis, mental health, nutrition, and old age. Practicing physicians will find the chapters dealing with the functional approach to medical practice very interesting.

Finally, it is indicated that in the past health education has been an information-centered program, while now it must be a behavior-centered program. As such, it will have a great potential contribution to make to the epidemiology of health.

The book has many nuggets of thoughts which the reader will find well worthwhile. The reviewer found the book so interesting that he read it through in one sitting.—*E.V.T.*

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*The Physical Examination of the Surgical Patient.* By J. Englebert Dunphy. Published by W. B. Saunders Company, Philadelphia. 326 pages, 188 figures. Price \$7.50.

In the preface of this book of 300 pages, the authors state that "an x-ray or a laboratory test is so easy to order, or a consultation is so readily available, and the results of either or both often appear so definite that the art of simply 'looking at the patient' is in danger of being lost." This book teaches surgical diagnosis made with "Tools: eyes, ears, fingers, nose and brain." There is nothing that needs more emphasis in surgical diagnosis today.

This book tells you how to examine a patient from the head to the feet to determine the presence or absence of disease or abnormality. The technique is described clearly. The illustrations are many and good. Anatomy in relation to diseased organs is here depicted. The beginner will learn the terminology of surgical diseases. There are little "tricks" about making an adequate physical examination that every clinician must learn. They are found in this text.

This book is needed by every medical student and hospital resident. A copy should be on the desk of every teacher of surgery, not only as an outline for thorough teaching of physical diagnosis in surgery, but as a constant check on his methods of teaching lest they wander from real physical diagnosis to the

frequently easier and less time-consuming diagnosis of the laboratory. The general practitioner would greatly profit by reading this book as a refresher course in surgical diagnosis.

Certain things contained in this volume have impressed the reviewer. They are: (1) the foreword by Dr. Francis D. Moore which tells in precise language the objective of the book; (2) the emphasis that physical diagnosis must be made by the natural senses; (3) the considerate treatment of the patient during examination; (4) the logical sequence of the surgical subjects presented; (5) and finally, the affectionate dedication of the book to two well known masters in the art of teaching surgery, Doctor David Cheever and Doctor John Homans.—*T.G.O.*

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*Clinical Instruction and its Integration in the Curriculum.* By Deborah MacLurg Jensen.

This is a specific and detailed book which would be particularly helpful to the young clinical instructor. It is complete and well organized, and should be particularly helpful in the second unit on "Curriculum Study—Planning and Integrating Nursing Courses."

For the faculty that needs assistance in "Faculty Organization and Preparation," Unit Five is complete and could be a good guide.

The entire book however has perhaps more words than necessary. The busy instructor may be discouraged and not take the necessary time for guidance from it. Also, it could be written in a much more inspirational manner. One doesn't sense from it that nursing and clinical instruction are the interesting and exciting areas we know them to be.—*H.A.*

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*Endocrine Treatment in General Practice.* By Max A. Goldzieher and Joseph W. Goldzieher. Published by Springer Publishing Company, Inc., New York City. 474 pages. Price \$8.00.

A group of well known authors in the field of endocrinology have composed a book to be used by the general practitioner as a guide to endocrine therapy. This book concisely reviews the theories behind the use of the endocrines in various diseases. It then outlines specifically the course of treatment, perhaps even a bit too dogmatically in some instances. Of especial interest is the manner by which the endocrines are related to each individual system. The chapter on obesity and leanness is a typical example of the marked strides that have been made in the field of endocrinology and, I am sure, will open the eyes of many readers as to the correct rationale in the treatment of these disorders. This book is highly recommended.—*R.H.O.*

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## AWARD TO PARKE DAVIS RESEARCHER

An award for "distinguished service in medicine" was presented to Dr. Elwood A. Sharp, director of clinical investigation for Parke, Davis and Company, at the University of Kansas last month. The presentation was made by the alumni association of the school, which presents awards in lieu of honorary degrees.

Dr. Sharp developed Ventriculin for the specific treatment of pernicious anemia, and he has played an important role in the development of other medicines, including hormones. He and his staff conducted field trials for scores of new drugs, including Dilantin and Chloromycetin, before they were made available to physicians for prescription.

He received an A.B. from the University of Kansas in 1913 and was graduated from the University of Kansas School of Medicine in 1915.

A total of \$1,351,350 was spent by the Borden Company in 1952 for milk and other farm products, payrolls, and taxes in the state of Kansas, according to an expenditure breakdown reported by the company's Prescription Products Division.



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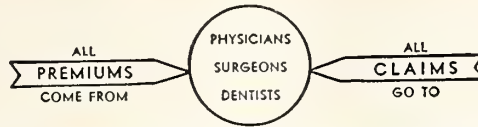
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In 1951 we spent for health and medical services, individually and through government, about 13.6 billion dollars. In the same year we spent for alcoholic beverages, tobacco, and smoking supplies 13.2 billion dollars, almost as much. Consumer expenditures for health and medical services came to \$8,976,000,000, as against almost as large a figure for alcoholic expenditures alone of \$8,450,000,000. Consumers spent more than 50 cents on smoking supplies for every dollar spent on health and medical services. . . .

Our economy can provide for adequate health services in the same sense that it can provide adequate whiskey, adequate cigarettes, adequate automobiles, adequate kitchen facilities, or adequate anything else that is set high enough in the priority of the desires of the average citizen.—*Emerson P. Schmidt, Director Economic Research, Chamber of Commerce of the United States.*

The use of injectable medicines by physicians in this country has tripled in the last five years, according to Graham Erdworm of the George A. Breon Company. He expects the current annual sales volume of \$200 million to double in the next decade.

A new wide-range antibiotic, "Ilotycin," has been placed on the market by Eli Lilly and Company. Tests by clinical investigators have indicated that the new antibiotic has certain desirable characteristics. It is especially effective against gram-positive infections which have become resistant to other commonly used antibiotics, and is also effective in persons hypersensitive to penicillin.

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# THE JOURNAL

*of the*

## KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

Volume LIV

AUGUST, 1953

No. 8

### Papilloma of the Thyroid: A Study of 50 Cases\*

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Papillary tumors of the thyroid are the most common type of malignant goiter in this country. While they are very rare in mountainous goiter regions, they constitute between 30 and 64 per cent of the malignant goiters in lowland countries. From the standpoint of geographic pathology, it is of interest that in our material they originated 22 times in colloid goiters, in 7 instances in exophthalmic goiters, and 9 times in lymphadenoid goiters. These three types of goiter are also rare in mountainous goiter regions but very common in the lowlands.

While Woelfler<sup>1</sup> described the papilliferous adenoma and Wegelin<sup>2</sup> recognized a solid and cystic form of papilloma, neither related the clinical course of the various types of papilloma to their gross characteristics. The first to suggest this relationship was Graham,<sup>3</sup> in 1925. Moritz and Bayless,<sup>4</sup> in 1931, distinguished five forms of papilliferous tumors: (1) the papilliferous cystadenoma which they regarded as a benign hyperplasia of the lining epithelium of a cystic adenoma, (2) the papilliferous adenoma which represents epithelial proliferation within the follicles of a preexisting benign adenoma, (3) the papilliferous cystadenocarcinoma arising in a papilliferous cystadenoma, (4) the papilliferous malignant adenoma which shows a papillary intraacinar hyperplasia in a malignant adenoma, and (5) the papilliferous carcinoid which these authors considered as non-tumorous. Follow-up studies by Moritz and Bayless in papilliferous cystadenocarcinoma showed 8 recurrences in 14, but no death. Of their 8 patients with papilliferous malignant adenomas, 4 died. Moritz and Bayless concluded that only the cystic papillary

tumors have a relatively benign course, while the solid papillomas behave like malignant tumors.

Our own experience does not confirm their conclusions. We found that cystic papillomas did not differ from solid forms; therefore, we classify all papillary tumors—as Crile<sup>5</sup> and Pemberton<sup>6</sup> do—as one group. Whether or not one is justified in calling all thyroid papillomas malignant, or potentially malignant, is of great importance to the patient, since the patient's entire future depends on this point of view. The patient may contemplate the purchase of new or additional life insurance. Should he be accepted, rejected, or "rated up" because he has a papilloma of the thyroid which his physician considers malignant? The executive who plans to expand his business may hesitate to do so, or he may stop future contracts or perhaps even retire, because he has been told that his papilloma of the thyroid is a malignant tumor. Should a young girl with a papilloma of the thyroid be subjected to total thyroidectomy and prophylactic bilateral radical neck dissection with resection of both sternocleidomastoid muscles and of both jugular veins? And should she be warned against marriage or raising a family? How malignant is a papilloma of the thyroid, and what is the 5-year survival rate if only the involved thyroid lobe is removed?

Many pathologists are overly cautious and call all papillomas cancer, which of course is a great injustice to the patient. We should remember that of patients in whom malignancy of the thyroid is discovered only on microscopic examination, 86 per cent survive 5 years (R. C. Horn<sup>7</sup>); and we should not forget the advice given by such an experienced goiter surgeon as McGregor<sup>8</sup>: "When there is a difference of opinion between the surgeon based on gross appearance and

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## TYPES OF SURGERY OF PAPILLARY ADENOCARCINOMA OBTAINED FROM LITERATURE

<i>Clinic</i>	<i>Lobectomy</i>	<i>Total</i>	<i>Radical Neck Dissection</i>	<i>Modified Neck Dissection</i>	<i>Lymph Node Groups</i>
1. University of Southern California Medical School		If nodes are not present, total thyroidectomy plus regional dissection is done.			If nodes are present, total thyroidectomy plus block dissection on involved side with resection of sternocleidomastoid muscle and jugular vein is done.
2. University of California School of Medicine, San Francisco	+		When indicated by metastatic glands		
3. Crile Clinic	+				Removal as nodes appear.
4. Hertzler Clinic	+				Removal as nodes appear.
5. Lahey Clinic	+		+		
6. Mayo Clinic	+		In presence of palpable nodes.		
7. Ochsner Clinic	+		+ In the presence of nodes		
8. Washington University Medical School and Barnes Hospital	+			Preservation of sternocleidomastoid muscle.	

different pathologists based upon microscopic study, no radical operation is advised. I have never regretted this course as yet."

The present report is based on a study of 50 patients with papilloma of the thyroid observed at the Hertzler Clinic during the years of 1940 to 1952, inclusive. They represent 31.2 per cent of our thyroid tumors.

*Age and Sex:* The papillomas were most frequent during the 4th and 5th decades of life. The medium age of our patients on admission was 41.8 years. Our youngest patient was 12 and the oldest 79 years of age. There were 45 women and 5 men in this series. Forty-five of the 50 patients had been aware of thyroid enlargement; in 5 patients the tumor was discovered on admission for various complaints. Twenty-four pa-

tients had known of their goiters for 1 year or less, while 8 were aware of neck enlargement for periods varying from 5 to 29 years. Six had noticed a marked increase in the size of their goiters during the last year.

*Gross Pathology:* Papillary carcinomas are usually unilateral. In 37 of the 50 specimens the papillary tumor was the only node, in 7 it had developed in a multinodular goiter. There were multiple tumors in 9 specimens, and 5 papillomas were bilateral. In 18 cases the nodes were sharply circumscribed, but in 22 the capsule was grossly invaded, and in 10 specimens the papillary tumor was without any capsule. Invasion of the neck muscles was noticed in 3 patients; the carotid sheath, trachea, and esophagus were involved

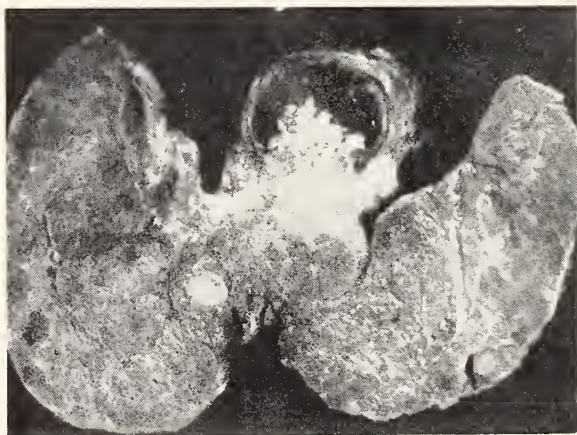


Figure 1. Cystic papilloma of thyroid isthmus from a 60-year-old woman. Weight of resected thyroid 48 grams. Patient died from hypertension one year after operation, without evidence of recurrence or metastasis.

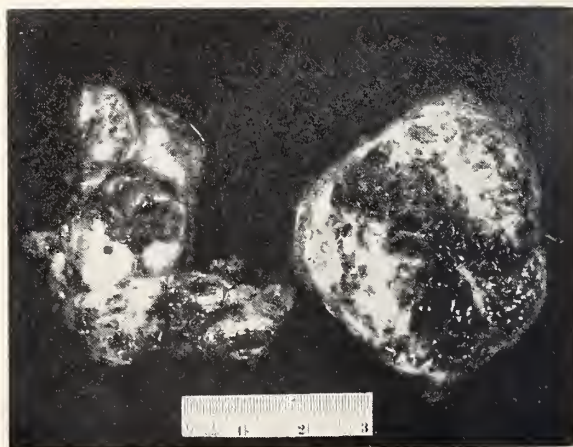


Figure 2. Solid papilloma of right lobe of thyroid with "aberrant gland," in a 12-year-old boy. He now has a small tumor in right side of neck, 1 year after removal, and local removal is advised.

twice. Both of these patients were over 60 years old.

Papillary tumors are, as a rule, of small size. Twenty-one of our papillomas were less than 2 cm. in diameter, 15 measured between 2 and 4 cm., and only 7 tumors had a diameter over 6 cm. The largest tumor in our series measured 8 cm. The weight of the resected specimens in our cases varied from 12 to 156 grams. Twenty-five tumors appeared completely solid; 10 tumors had small clefts and lacunae filled with bloody or clear fluid. Distinctly cystic tumors with visible papillary projections were encountered in 15 cases, their contents being yellow or brown, and in 18 tumors gross hemorrhage was noticed. Microscopically the papillae varied in size and shape and were covered by cuboidal or columnar epithelium in one or more layers. Mitotic figures were infrequent. Calcium deposits were found in 13 of our cases and lymphocytic infiltration in 17.

While most of our specimens presented a papillary structure throughout, follicular and trabecular structures were not uncommon in the solid forms (Table I). Crile points out that it is of practical importance to distinguish these variants of papilloma from the more malignant non-papillary carcinomas. One of our patients, who had a large tumor which involved the wall of the esophagus, lived 5 years after incomplete operation in spite of a combination of a papilloma (grade 1), Hurtle cell tumor (grade 2), and solid carcinoma (grade 4).

We agree with Moritz and Bayless, that invasion of the thyroid tissue or adjacent structures and evidence of metastatic growth is the only criterion of malignancy. In only one tumor did we see blood vessel invasion. There was no strict correlation between histologic grade of malignancy and clinical course. We accept Willis'<sup>9</sup> standpoint that papillary adenomas cannot be distinguished cytologically from papillary carcinomas. Dunhill,<sup>10</sup> in his large experience, saw only two tumors which he regarded as

"benign papillomas," and one of these later recurred. The discovery that an enucleated tumor has a papillary structure, however highly organized and quiescent in appearance, calls for lobectomy of the tumor-bearing lobe. We wait for paraffin sections from 4 to 5 blocks before making a histological diagnosis of malignant papilloma.

It may be of interest to surgeons who rely on frozen sections to know that even the pathologists of the Mayo Clinic, in spite of their unsurpassed experience in tissue diagnosis during operation, refuse to make a histologic diagnosis on papillary thyroid tumors from fresh frozen sections (Judd).<sup>11</sup>

The fact that Moritz and Bayless describe benign papilliferous tumors in aberrant cervical glands is further proof of the difficulty of diagnosing malignancy from the histologic structure, since there is general agreement today that the lateral aberrant thyroid tumors are metastatic extensions to the deep cervical lymph nodes from a primary papilloma of the thyroid.

Eight of our patients showed papillary tumors in cervical nodes on admission; 3 of these had had former operations.

The preoperative diagnosis in 42 of our 50 cases was benign goiter. Only in 8 patients was a malignant tumor suspected before operation.

*Treatment:* Bilateral subtotal thyroidectomy was performed in 18 patients and total thyroidectomy with radical neck dissection in two elderly patients. In 28 cases only one lobe was removed. In two cases removal of enlarged cervical nodes, and in two others resection of involved muscles, jugular vein, and wall of the esophagus, was done in addition to lobectomy. In 4 cases, so-called aberrant tumors were removed with thyroidectomy.

*Follow-up:* Of our 50 patients, 42 are known to be alive today, and 40 are without evidence of disease.

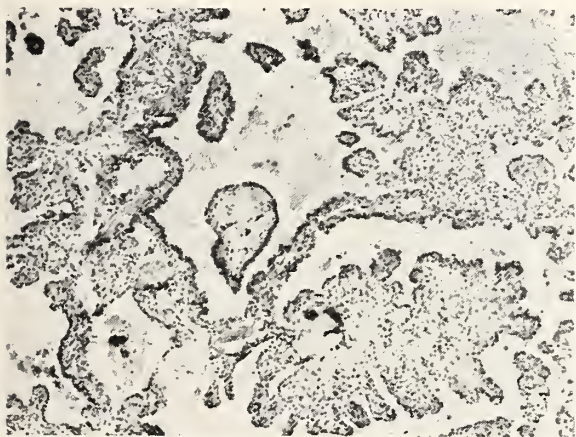


Figure 3. Microscopic section of "aberrant gland" of same case as Figure 2. The structure looks benign, in spite of being from a metastatic tumor.



Figure 4. Papilloma which had a solid appearance. Invasion of the capsule is evident, while cytologic criteria of malignancy are absent. No recurrence after bilateral thyroidectomy without neck dissection.



Case	SEX AND AGE			PATHOLOGY					METASTASES	
	Sex	Age at onset	Age at diagnosis	Size of primary tumor	Capsule invasion	Solid papilloma	Cystic papillary	Histology	Cervical nodes	Mediastinal nodes
1. 22629	M	31	36	6.5 cm.	—	+	—	Solid alveolar papillary	—	—
2. 23950	Fe	20	35	2.5 cm.	—	—	+	Papillary, large and small follicular	—	—
3. 23137	Fe	15	44	5 cm.	+	—	+	Solid alveolar papillary	—	—
4. 24391	Fe	50	54	3.0 cm.	Invasion fibrous tissue	—	+	Papillary and small follicular	—	—
5. 24449	Fe	34.5	39	1.3 cm.	Yes	—	—	Exophthalmic goiter	—	—
6. 24839	Fe	43	43	0.4 cm.	Yes—Thyroid tissue invas.	—	—	Trabecular, follicular papillary	—	—
7. 24985	M	27	30	6.0 cm.	Yes	—	+	Trabecular, follicular and papillary	—	—
8. 25247	M	50	50	1.0 cm.	No capsule. In thyroid tissue	—	—	Follicular papillary squamous cell metaplasia	—	—
9. 25359	Fe	27	39	1.1 cm.	No	—	+	Large and small follicular and papillary	—	—
10. 25699	Fe	22.5	23	1 x 2 cm.	No	—	—	Non-encapsulated infiltrating papilloma	—	—
11. 25912	Fe	42	43	7 mm.	Yes	—	—	Small follicular and papillary in exophthalmic	—	—
12. 25949	Fe	?	60	2.0 cm.	Yes	—	+	Papillary	—	—
13. 26125	Fe	60	61	1.5 cm.	No capsule	—	+	Papillary trabecular Hurthle cell	—	—
14. 26389	Fe	58	67	2.3 cm.	No capsule	—	—	Diffuse colloid trabecular and papillary	—	—
15. 26467	Fe	29	37	6.4 cm.	No	+	—	Papillary	—	—
16. 26500	Fe	22	23	3.0 cm.	No	—	—	Follicular and papillary	—	—
17. 26668	Fe	19	19	5.0 cm.	Yes	—	+	Follicular and papillary	—	—
18. 26726	Fe	51	51	5.0 cm.	Yes	—	—	Papillary	—	—
19. 26792	Fe	24	24	1.2 cm.	Yes	—	+	Follicular	+	—
20. 26927	M	28	45	1.1 cm.	No	—	—	Papillary and follicular	—	—
21. 26975	Fe	26	42	0.8 cm.	No	—	—	Large and small follicular and papillary	—	—
22. 27237	Fe	12	15	3.0 cm.	Yes	—	—	Follicular and papillary	—	—
23. 27546	Fe	56	60	2.5 cm.	Yes	—	—	Papillary	—	—
24. 27548	Fe	21	31	8.0 cm.	Yes	—	+	Small-follicular	—	—
25. 27643	Fe	67	79	6.0 cm.	Yes	—	—	Follicular, trabecular and papillary Hurthle cell	—	—
26. 27975	Fe	18	20	4.5 cm. to 1.0 cm.	Yes	—	—	Follicular and papillary	+	—

Case	TREATMENT						SURVIVAL (YEARS)		Remarks
	Subtotal bilat.	Total	Lobectomy	Removal of lat. nodes	Radical neck dissection	Sterno-mast.; Jug. vein resect.	From time of onset	From time of diagnosis	
1. 22629	—	—	+	—	—	—	10½ yrs.	5½ yrs.	At surgery there was diffuse enlargement of the right lobe. Living and well.
2. 23950	—	—	+	—	—	—	22 yrs.	7 yrs.	Solitary nodule palpable. Living and well.
3. 23137	+	—	—	—	—	—	36 yrs.	7 yrs.	Living and well. No recurrence.
4. 24391	+	—	—	—	—	—	8 yrs.	4 yrs.	Living and well.
5. 24449	+	—	—	—	—	—	12 yrs.	8 yrs.	Living and well.
6. 24839	—	—	Left lobectomy	—	—	—	6 yrs.	6 yrs.	Solitary walnut-sized nodule palpable in left lobe. Living and well.
7. 24985	—	—	Left lobectomy	—	—	—	10 yrs.	7 yrs.	Firm enlargement of left lower pole. Living and well.
8. 25247	—	—	Right lobectomy	—	—	—	5 yrs.	5 yrs.	Not encapsulated. Invaded surrounding thyroid tissue. Living and well.
9. 25359	—	—	Right lobectomy and isthmus	—	—	—	17 yrs.	5 yrs.	Recurrence?
10. 25699	—	—	Left lobectomy	—	—	—	7 yrs.	6.5 yrs.	Firm bilateral goiter.
11. 25912	—	—	1945—Left 1947—recurrence on left	—	—	1947—jugular vein and esophageal wall only	7 yrs.—5 yrs. from recurrence	7 yrs.	Not encapsulated. Primary surgery in 1945. Recurrence in 1947. Died in June, 1952.
12. 25949	+	—	—	—	—	—	1½ yrs.	1½ yrs.	Death 1½ years following surgery. Death from other causes.
13. 26125	+	—	—	—	—	Adherent—not invading	5 yrs.	4 yrs.	No capsule. Stuck to sternocleidomastoid, not invading. Clinically, goiter was fixed.
14. 26389	+	—	—	—	—	—	13 yrs.	4 yrs.	No capsule. In good health.
15. 26467	+	—	—	—	—	—	14 yrs.	6 yrs.	Living and well.
16. 26500	—	—	+	—	—	—	?	?	Unable to trace.
17. 26668	—	—	+	—	—	—	?	?	Unable to trace.
18. 26726	+	—	—	—	—	—	5 yrs.	5 yrs.	Living and well.
19. 26792	—	—	+	+	—	—	4 yrs.	4 yrs.	No recurrence.
20. 26927	+	—	—	—	—	—	22 yrs.	5 yrs.	Living and well.
21. 26975	—	—	+	—	—	—	?	?	Unable to trace.
22. 27237	+	—	—	—	—	—	7 yrs.	4 yrs.	Living and well.
23. 27546	+	—	—	—	—	—	4 yrs.	3 yrs.	Living and well.
24. 27548	—	—	+	—	—	—	13 yrs.	3 yrs.	Living and well.
25. 27643	—	—	+	—	+	Resection of jugular vein and piece of esophageal wall	17 yrs.	5 yrs.	Died five years after operation.
26. 27975	—	—	+	—	—	—	4 yrs.	2 yrs.	Two years living and well. Biopsy on 4/22/48. Lobectomy on 4/28/53.



Case	SEX AND AGE			PATHOLOGY					METASTASES	
	Sex	Age at onset	Age at diagnosis	Size of primary tumor	Capsule invasion	Solid papilloma	Cystic papillary	Histology	Cervical nodes	Mediastinal nodes
27. 28002	Fe	4	24	1.2 cm.	Yes	—	—	Follicular and papillary	+	—
28. 28307	Fe	45 ?	50	0.4 cm.	No	—	—	Papillary with tissue invasion	—	—
29. 28979	Fe	?	47	1.7 cm.	No	—	—	Follicular, trabecular and papillary	—	—
30. 29195	Fe	?	50—Found on routine Px.	1.0 cm.	No	+	—	Papillary	—	—
31. 29218	Fe	?	67—Found on routine Px.	0.8 cm.	No	—	—	Papillary	—	—
32. 29331	Fe	22	22	1.4 cm.	No	—	—	Follicular and papillary	—	—
33. 29706	Fe	43	43	1.5 cm.	Yes	—	—	Papillary on right and left	—	—
34. 29861	Fe	48 ?	48	0.6 cm.	No	—	+	Follicular and papillary	—	—
35. 30117	Fe	57	59	6 cm.	No capsule	—	—	Follicular and papillary	—	—
36. 32785	M	8	12	4 cm. Three metastases, 1.8 to 0.8 cm.	Yes	+	+	Trabecular and papillary	+	—
37. 23786	M	30	34	4.0 cm.	Yes	—	—	Follicular and papillary	—	—
38. 24114	Fe	35	52	6.0 cm.	No	—	+	Papillary	+	+
39. 23696	Fe	35	41	5.0 cm.	No	—	—	Trabecular, follicular and papillary	—	—
40. 23293	M	64	64	3.5 cm.	No	—	—	Follicular and papillary	—	—
41. 20804	Fe	50	50	1.2 cm.	Yes—invasion of thyroid tissue	—	—	Papillary	—	—
42. 26053	Fe	29	29	1.1 cm.	Yes	—	—	Follicular and papillary	—	—
43. 21022	Fe	54.5	56	6.0 cm.	Yes—Grossly	—	+	Trabecular, follicular and papillary	—	—
44. 25169	Fe	33	34	8 mm.	Yes	—	—	Papillary	—	—
45. 20852	M	33	36	2.0 cm.	Yes	—	—	Papillary	—	—
46. 28281	Fe	35	38	4.5 cm.	Yes	—	+	Trabecular, follicular and papillary	—	—
47. 21490	Fe	25	25	2.5 cm.	Yes	—	—	Papillary	—	—
48. 33372	Fe	31	34	4.5 cm.	Yes	—	—	Trabecular, follicular and papillary	—	—
49. 22837	Fe	26	28	6.0 cm.	No	—	—	Follicular and papillary	—	—
50. 23423	Fe	46	46	8 mm.	No	—	—	Trabecular, follicular and papillary	—	—

Case	TREATMENT						SURVIVAL (YEARS)		Remarks
	Subtotal bilat.	Total	Lobectomy	Removal of lat. nodes	Radical neck dissection	Sterno-mast.; Jug. vein resect.	From time of onset	From time of diagnosis	
27. 28002	—	—	+ Homo-lateral node re-section	+ Done here	Bilateral since last seen here	—	24 yrs.	4+ yrs.	Patient had eight operations elsewhere between 4 and 24 years. Two operations here. Living and well. X-ray therapy elsewhere since surgery here. Negative chest X-ray in July, 1950.
28. 28307	+	—	—	—	—	—	8+ yrs.	3+ yrs.	Living and well.
29. 28979	+	—	—	—	—	—	3 yrs.	3 yrs.	Living and well.
30. 29195	—	—	+	—	—	—	3 yrs.	3 yrs.	Living and well.
31. 29218	—	—	+	—	—	—	2 yrs.	2 yrs.	Living and well.
32. 29331	—	—	+	—	—	—	1 yr.	1 yr.	Living and well.
33. 29706	+	—	—	—	—	—	?	?	Unable to trace.
34. 29861	—	—	+	—	—	—	2 yrs.	2 yrs.	Living and well.
35. 30117	—	+	—	—	+ Left side only	+ Left side only	5 yrs.	2 yrs.	Living and well. Muscle invasion at surgery.
36. 32785	—	—	+	—	—	—	4½ yrs.	½ yr.	Postoperative X-ray therapy. Living with recurrence. To have radical neck dissection.
37. 23786	—	—	+	—	—	—	6½ yrs.	2½ yrs.	Living and well.
38. 24114	+	—	—	+	—	—	3 yrs.	6 yrs.	3 Operations: (1) Right lobectomy in 1944. Muscle invasion with direct extension to upper mediastinum. (2) Removal of three recurrent nodes, 1948. (3) Metastasis in neck muscle, 1949. Patient died 6 years following surgery with pulmonary metastases, 1950.
39. 23696	—	—	+	—	—	—	15½ yrs.	9½ yrs.	Living and well. No recurrence.
40. 23293	—	—	+	—	—	—	10 yrs.	10 yrs.	Living, in poor health. No recurrence.
41. 20804	+	—	—	—	—	—	1 yr.	1 yr.	Living and well.
42. 26053	—	—	Bilateral lobectomy in 1946	+ 1946	—	—	11 yrs.	6 yrs.	First surgery in 1941 elsewhere. Recurrent symptoms in 1943 and again in 1946, with surgery in 1946. Living and well 6 years since last surgery in 1946.
43. 21022	—	—	+	—	—	—	11.5 yrs.	10 yrs.	Living and well. No recurrence.
44. 25169	+	—	—	—	—	—	8 yrs.	7 yrs.	Living and well. No recurrence.
45. 20852	+	—	—	—	—	—	13 yrs.	10 yrs.	Living and well. No recurrence.
46. 28281	—	—	+	—	—	—	7 yrs.	4 yrs.	Living and well. No recurrence.
47. 21490	+ 1941	—	—	—	—	—	12 yrs.	12 yrs.	Living and well. No recurrence.
48. 33372	—	—	+	—	—	—	6 yrs.	3 yrs.	Living and well.
49. 22837								8 yrs.	Living and well.
50. 23423	+ 1930	—	+ 1943	—	—	—	10 yrs.	10 yrs.	Surgery in 1930—Hyperplastic goiter. Surgery in 1943—Papillary adenocarcinoma. Living and well 10 years.

Acknowledgment: We are indebted to V. E. Chesky, M.D., for the use of 33 cases from his service, and to I. A. Koenke, M.D., for the use of 12 of her cases.



Three patients are dead, and 5 are lost in the follow-up study. One died at the age of 58, 6 years after her first operation which included radical neck dissection. One patient died at 84 years of age, 5 years after incomplete removal of a papillary carcinoma which had involved the esophagus and the deep jugular vein. The third patient died from hypertension at the age of 60, one year after thyroidectomy, without showing signs of recurrence or metastasis.

Characteristic of the long life history of most papillomas is the case of a 26-year-old woman who had had 8 neck operations before she came to our clinic with a large cervical node. After its removal another "aberrant thyroid" appeared. Following total thyroidectomy, which revealed a primary papilloma in the homolateral lobe, she is now free of symptoms 22 years after her first operation. Another patient, with lateral papillary tumors, had 3 operations for enlarged cervical lymph nodes and is now free of symptoms 7 years after her last operation. We have followed 23 of our patients for more than 5 years; 18 are known to be alive and free of disease, while two have had recurrences, and 2 are dead of their thyroid disease. The over-all 5-year survival rate is 87 per cent.

#### CONCLUSIONS

Papillary tumors are the most common form of tumors of the thyroid. Solid papillomas are not more malignant than cystic forms, but have, even in combination with follicular and trabecular structures, a relatively benign course. Invasion of the capsule or the presence of metastasis is the only criterion of malignancy of a papillomatous tumor.

So-called "aberrant thyroids" are metastases of a primary tumor in the thyroid and will continue to recur as long as the latter is not removed.

Since papilloma of the thyroid is a relatively benign tumor, we regard prophylactic radical neck dissection as not justified. When the papilloma is confined to the thyroid, no recurrence or death is to be feared following removal of the tumor-bearing lobe. With this conservative operation our over-all 5-year survival rate was 87 per cent. Since patients with papilloma of the thyroid are often young women, prophylactic radical neck dissection in every case of papilloma of the thyroid seems to us an unnecessary mutilation. We feel that the diagnosis "cancer" is a great injustice to a young patient who has more than a 90 per cent chance of cure after simple lobectomy. We prefer therefore to call this tumor papilloma of the thyroid, as is generally done in European countries.

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## Gynecological Pain\*

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The present day practitioner of medicine considers the patient as an organism with many systems, some of which are definitely inter-related. The gynecologist does not consider the female as having a genital tract entirely divorced from other regions. He realizes that each individual has many systems and that disease of other systems can directly or indirectly influence the genital tract. He also remembers that pelvic pathology is not always the sole cause of many symptoms which she may present. There are many individuals who may

present familial and/or hereditary characteristics or developmental anomalies. These must always be considered in evaluating one's findings.

Pain is a symptom which is common to all systems of the body. The genital tract is, of course, no exception in this respect. Pain is the most common complaint given to a gynecologist as a reason for an examination. Pelvic pain accounts for at least 35 per cent of the admissions to a gynecological ward. Unfortunately, it is too often customary to regard all feminine pain located anatomically between the umbilicus and the perineum as originating in the generative organs, especially if it is associated with or exaggerated by menstruation. It matters little if the

\* Presented at the 94th annual session, Kansas Medical Society, May 4-7, 1953.

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pelvic organs are found to be normal, for the idea is firmly fixed that pelvic pain is always genital in origin. There is also an unfortunate tendency at times to invent pelvic pathology such as a cystic or prolapsed ovary, or even a displaced uterus, in order to fit the patient's symptoms. In a desire to relieve pelvic pain, many operations are done in the name of gynecology.

Diddle, O'Connor and Winebrenner,<sup>1</sup> reporting recently on unnecessary gynecological operative procedures in five non-teaching hospitals, found 28 per cent of 889 operations were unjustified. Their opinion was based on a correlation of clinical indications and histopathology. They were also of the opinion that the great majority of 155 uterine suspensions and 75 ovarian resections were unjustified. The principal complaints given by the patients were abdominal pain or backache. They concluded that the majority of hysterectomies done for such reasons were unjustified as tissues removed were normal. These women most probably had psychosomatic or orthopedic problems. They were also of the opinion that such conditions existed in similar hospitals throughout the entire country.

Norman F. Miller,<sup>2</sup> in a paper entitled "Hysterectomy, a Therapeutic Necessity or Surgical Racket," found that in 22 per cent of the cases, the main symptom and often the only one was lower abdominal pain.

At a meeting of the Southern Gynecological and Obstetrical Society in Dallas in 1951, William F. Guerriero<sup>3</sup> gave a presentation of gynecic-like pain. Of 1,100 patients whose main complaint was pelvic pain, he found 42 per cent had no pelvic pathology. These patients were grouped as follows:

*Urologic:* Forty-four per cent, of which 75 per cent were found to have pain as a result of posterior urethritis, a condition described by his group as the female prostate.

*Orthopedic:* Twenty-five per cent, mostly due to postural and mechanical conditions.

*Medical:* Seven per cent. Among the medical conditions most commonly found responsible for gynecic-like pain were:

Colitis in 40 patients.

Diverticulitis in 8 patients; (must always be considered in women over 40).

Amebiasis in 5.

Cancer of the large bowel in 3.

Polyps of the gastrointestinal tract in 4.

The remaining 24 per cent were classified as a mixed group and included conditions in other systems than the ones already mentioned. It is of special interest to note that 12 per cent of the mixed group were found to be of psychic origin.

James C. Doyle,<sup>4</sup> in reporting in 1953 on unnecessary hysterectomies, found abdominal pain the only complaint in 185 patients and backache the single

symptom in 86 others subjected to hysterectomy, in none of whom did a pathological lesion actually exist.

When the consultant gynecologist finally sees these patients, they often have had many surgical procedures, including appendectomy, removal of part or all of an ovary, or uterine suspension, and, unfortunately, they still have lower abdominal or pelvic pain.

The uterus, tubes, and ovaries are innervated from the autonomic nervous system, and sensations from them are produced in the same fashion as visceral sensations from the intestine, liver, or spleen. The parietal peritoneum, vagina, and external pudendal regions are innervated by myelinated fibers, and pain sensations originate directly from these areas. Pelvic pain as classified by Mengert<sup>5</sup> can be of genital or extragenital origin as follows:

#### I. *Pain of Genital Origin:*

1. Gonorrhea, pelvic inflammatory disease, pelvic cellulitis, hemorrhage.
2. Uterine prolapse, adhesions, twisted pedicle of ovarian cyst.
3. Periodic distention of endometrial implant.
4. Tumor incarcerated in pelvis.
5. Rupture of uterus, tube, or bladder.

#### II. *Pain of Extragenital Origin:*

1. Pelvic Neurosis.
2. Pain originating in other pelvic structures.
  - a. Bony, sacro-iliac.
  - b. Urinary tract.
  - c. Intestinal tract, colitis, diverticulitis, appendicitis.

Time prevents my discussing each one of these conditions in detail, so I will confine my remarks to those disorders that are commonly encountered and at times confused. Among the acute conditions that must be considered are appendicitis, acute salpingitis, extra uterine pregnancy, twisted pedicle of an ovarian cyst, ovarian hemorrhage and ureteral calculus.

Acute appendicitis is perhaps the most frequent cause of lower right quadrant pain. A typical case with sudden onset of pain which is at first umbilical or epigastric, and later localized near McBurney's point with gastrointestinal disturbances, usually offers no diagnostic problem. Where this does not occur, one must consider, among other acute conditions, salpingitis. This differentiation should not be difficult in the average case. The history of exposure, the onset of symptoms with high fever, chills, high leukocyte count, and bilateral abdominal pain are factors that seldom occur in other conditions. Ruptured tubal pregnancy must always be considered, and in such a condition the history will be of great value. Where rupture has taken place, as evidenced by hemorrhagic shock, one should have no difficulty in determining



this. Cul-de-sac puncture is a valuable aid in such a diagnosis.

Hemorrhage from a ruptured follicle or corpus luteal cyst or ovulation may at times be confusing. A ruptured graafian follicle with severe pain at ovulation is distinguished by its timing and recurrence. There have been many laparotomies done for supposed acute appendicitis, where ovarian hemorrhage had occurred.

Differential diagnosis is at times difficult. During the past six months I have seen two 14-year old girls with acute abdomens where appendicitis was the most likely diagnosis but where paraovarian cysts with hemorrhage into the mesosalpinx were found to be the primary condition.

Twisted pedicle of an ovarian cyst usually presents a clinical picture of acute abdomen. The main symptom, of course, is abdominal pain of severe type. Severity of shock depends on the size of the cyst and amount of disturbed blood supply. Diagnosis is easy if one is aware of the pre-existence of such a cyst prior to the acute attack.

Among acute conditions of extragenital origin, ureteral colic often causes pelvic pain, and one should always rule it out before surgery is performed. Examination of the urine with findings of red cells and x-ray of the kidney and bladder region will usually give sufficient information.

A correct diagnosis of those conditions that cause an acute abdomen can, in the average case, be successfully made. As the great majority of these conditions require immediate surgery, this differentiation is not always obligatory. It is often made only at the time of surgery. Most gynecologists, however, prefer to do an occasional laparotomy needlessly rather than to fail to do so and later have a ruptured extrauterine pregnancy or ruptured tubal abscess found at autopsy.

Chronic pelvic pain or lower abdominal pain may be the result of a multitude of conditions. One must always rule out pain of bony origin before holding the pelvic organs responsible. H. C. Pitkin,<sup>6</sup> in discussing orthopedic causes of pelvic pain stated, "Pelvic pain which regularly accompanies physiologic relaxation of the female pelvis that precedes menstruation, and is thought to be a hormonal disturbance, is so common that many women accept it as being unavoidable. Relaxation of the intrapelvic joints is one of the commonest causes of pelvic pain in women. Other causes are disturbed function of the pelvic and lumbar joints, muscles and ligaments, such as that caused by sprains or strains. Pelvic pain can also result from structural changes in the pelvic and lumbar spines such as that caused by congenital defects, fractures, degeneration of intervertebral discs, arthritis, or neoplasm. Disturbed function of the lower extremities such as flat feet can be responsible for pelvic pain."

When pressure on tender areas of the trunk or lower extremity produces or aggravates referred pain, and when procaine injection relieves this pain, one may assume that the site of origin has been located. In inaccessible areas, an estimate of articular function is necessary to locate the origin of pain. There is no question that the orthopedists have at times relieved pelvic pain after the gynecologists or urologists have been unable to do so. Complete comprehension of such cases has often been narrowed because of over-specialization.

Chronic pelvic pain is often the result of cervical pathology. Collins, Schneider and Baggs,<sup>9</sup> in reporting on benign lesions of the cervix, found that pelvic pain was the chief complaint in 50 per cent of 226 cervical stumps. Although lower abdominal pain and backache are caused by disease of intraabdominal organs, these symptoms are frequently the result of a chronically diseased cervix. Sir James Young,<sup>10</sup> in 1930, first described this important relation between lower abdominal pain and a chronically diseased cervix, and called attention to the diagnostic significance of a clinical procedure for reproducing the patient's symptoms.

On the Tulane service, the following clinical test has proved of great help in determining the part the cervix or cervical stump plays in producing the patient's symptoms. In the absence of fixed pelvic masses, the ability to reproduce a patient's symptoms on motion of the cervix means that the cervix is the etiological factor. The important factor is reproduction of pain and not merely production of pain. Production of pain is possible in any woman if the examination is vigorous. Reproduction of pain means the ability on gentle palpation to bring about the same pain in the same locality, with the same distribution, as complained of by the patient in her history. This is true whether the patient complains of lower abdominal pain, backache, dyspareunia, and bearing down sensation, alone or in any combination.

The examining fingers should first be inserted into one lateral fornix and the cervix pushed to the opposite side of the pelvis. If the pain is on the right side, the cervix should be pushed to the left, with resulting tension on the right cardinal ligament and vice versa. The patient should then be asked, "Is this the same pain of which you complain?"—not merely, "Does this hurt?" It is possible to displace a healthy cervix considerably without discomfort. If backache is a complaint, the examining fingers are introduced into the posterior fornix, the cervix is pushed toward the symphysis pubis, and the uterosacral ligaments are placed under tension. Traction on the infected cervix, where ligamentous involvement is present, will also reproduce lower abdominal pain or backache. Reproduction of the patient's backache means that the cervix is the causative factor and that

appropriate methods of therapy directed toward curing the chronic cervicitis will produce relief.

Deep seated dyspareunia is frequently due to a chronically diseased cervix. Whether or not the cervix is the cause of dyspareunia can be decided by motion of the cervix and attempting to reproduce the same type of pain as the patient experienced during coitus. Removal of the diseased cervical stump is usually followed by complete relief.

The symptoms initiated and maintained by chronic cervicitis are due to lymphatic extension of the responsible organism or organisms. Extension down the lymphatics of the uterosacral ligament produces backache. Extension laterally into the lymphatics of the broad ligament produces low abdominal pain. Treatment consists of cauterization, conization, or complete excision of the cervical stump, depending upon the extent of the pathology.

Uterine prolapse of a second or third degree can at times be held responsible for some instances of chronic lower abdominal pain, and this can be corrected by procedures depending upon the age of the individual. In the young individual with considerable prolapse, abdominal suspension and repair of the pelvic relaxation is occasionally necessary. This, however, should always be preceded by the use of a pessary as a therapeutic test. In women in their late 30's and over, any prolapse of the uterus should be treated by a vaginal hysterectomy.

A retrodisplaced uterus used to be thought of as an important factor in the cause of chronic pelvic pain. The present day gynecologist, however, does not recognize this. There are many women with retrodisplaced uteri who do not ever have chronic abdominal pain or backache. Subjecting such individuals to uterine suspensions is unfortunately an error that is too often committed.

Chronic pelvic pain is a symptom that often accompanies chronic pelvic inflammatory disease and endometriosis. This pain varies in intensity, depending upon the extent of the inflammatory lesion or the extent of the endometrial process. Total abdominal hysterectomy and bilateral adnexectomy is the procedure advocated in those patients having extensive pelvic inflammatory disease that has caused severe pain and menstrual disturbances. The same procedure is advisable in patients having extensive endometriosis. Fortunately, however, there are many patients having endometriosis of such a degree that it does not warrant a radical procedure.

Pelvic sympathectomy is at times recommended for the relief of severe primary dysmenorrhea that has not responded to any conservative treatment. It is also used in endometriosis where conservative surgery can be performed but the possibility of dysmenorrhea continuing is great, in instances where abdominal surgery is performed for cancer of the uterus, tubes, or

ovaries, and in some instances where repeated laparotomies have failed to relieve pain of unknown origin.

It is difficult to separate real pain from psychic pain, or that which is expected to occur when bleeding appears. It is necessary to differentiate between these two in order to select properly the patient that will be helped by sympathectomy. Sturgis<sup>8</sup> and Allbright, and later Sturgis and Meigs, found a test satisfactory in 86 to 90 per cent of patients operated upon for relief of dysmenorrhea. They proved that essential dysmenorrhea could be relieved by stilbestrol or estradiol dipropionate, given in proper dosage to prevent ovulation, it being well known that anovulatory cycles are painless. This is a test to separate real dysmenorrhea from psychic dysmenorrhea. To prevent ovulation, begin on the first day of the menstrual cycle with 1 mg. of stilbestrol daily for 20 days. If a flow occurs three to five days later, it is considered anovulatory and it should be painless. In only those patients who have no pain at such a period should a resection of the hypogastric sympathetic nerves be done.

Phaneuf<sup>7</sup> reported the results in 76 patients between the ages of 13 and 38 on whom presacral neurectomy had been done for relief of intractable dysmenorrhea, where all simpler methods of treatment had failed. Of 68 on whom a follow-up was made, 40, or 59 per cent, had satisfactory results; that is, pain was absent or barely noticeable after surgery. Nineteen, or 29 per cent, were improved; that is, they had pain but considered themselves greatly relieved. Eight, or 12 per cent, were unimproved.

In patients who are properly selected and on whom a correct hypogastric sympathectomy is performed, clearing out all the nerve fibers in the interiliac trigone down to the periosteum, there should be universally good results. The poor results seen are in badly selected cases or because of inadequate nerve resection.

Pelvic neurosis is one of the extragenital causes of pelvic pain. It often originates from sexual incompatibility, infidelity, sterility, and other sexual factors that are the basic aspects of a woman's life. It is always difficult, and at times impossible, to obtain such information from the patient. Only by careful examination, eliminating abnormal pelvic organs, can one even suspect such a condition as pelvic neurosis. Even then, however, careful and patient questioning must be carried on before one can hope to arrive at a diagnosis. When this has been done, such a patient no longer should remain under the care of a gynecologist but should be referred to the psychiatrist. Too often, however, such individuals have been subjected to one or more pelvic operations before a diagnosis of pelvic neurosis has been established. Fortunately, most individuals are quite stable. Others who have low pain thresholds or neurotic dispositions are less stable, and they are thus likely to over-react to even



slight lesions of pain-sensitive structures. In persons of this latter group there often develops over-tenseness of the muscles, especially those in the low back. Anxiety concerning menstruation or sex factors, in addition to perhaps poor posture and poor nutrition, leads to perception of pain, the misinterpretation of which, under neurotic pressure tendencies, increases their anxiety and brings about a vicious circle of pain, anxiety, and increased tension.

Under different conditions, however, these same individuals may evidence their neurotic tendencies by cardiac neuroses with chest pain or gastric neuroses with upper abdominal pain and gastrointestinal disturbances. Most psychiatrists will admit that they are unable to offer a satisfactory explanation as to why some patients exhibit pelvic neuroses and others cardiac or gastric. Surely the gynecologist or general practitioner should not be criticized when he is unable to cope with such patients.

One must try to reach a happy medium in dealing with a woman whose chief complaint is lower abdominal pain. At times the gynecologist must be quite conservative and at other times appear to be radical. One's experience is often the only measure that can be used in determining which course to follow. The internist is often the first to see such a patient, and too often he considers it as a strictly medical condition. Also too often he fails to consider the pelvic organs as a possible cause and even fails to do a pelvic examination. He attempts to fit some disease pattern to the symptoms complained of. I cannot too strongly stress the importance of pelvic examination as routine in any woman. This is especially true, of course, in any woman complaining of pelvic pain. If this is not done by the internist, he should then have a gynecological consultant as a part of his routine examination of such an individual.

Rectal examination is often a valuable aid for diagnosis of pelvic pathology where the main complaint is pelvic pain. This examination is of considerable value in young females with an intact hymen. Often it is the only means of determining pelvic pathology in such patients. This is especially true in uterosacral endometriosis and in pelvic infections with fixation of the pelvic structures in the cul-de-sac. Such a procedure should always be a part of the gynecologist's examination, just as it should be part of the internist's.

It is, of course, quite true that often the surgeon is at fault and surgical procedures are done without adequate findings. Too many times are normal ovaries removed for simple cysts or suspended because of questionable prolapse. Too often are uteri suspended because of retroversions that are not the cause of pelvic pain. Too often are normal uteri removed where pelvic pain has been the only complaint. In most in-

stances, this pain remains after such surgery is done. When the consultant gynecologist finally sees the unfortunate patient, she has a battle scarred abdomen and still has her pain. Such cases are, of course, the exception, but I can assure you they do exist.

#### CONCLUSIONS

What then can we do about lower abdominal or pelvic pain? The differential diagnosis of the acute abdomen can usually be successfully carried out. As most acute conditions require immediate surgery, the positive differentiation is not necessarily obligatory. Chronic pelvic pain presents a more difficult situation, and differentiation at times is almost impossible. Thorough examination from an orthopedic standpoint should always be done. By such careful examination, orthopedic causes can usually be ruled out.

It is difficult to make a diagnosis of pelvic neurosis. Sexual incompatibility, infidelity, or even sterility may be causal factors that at times are difficult to evaluate. As a matter of fact, the presence of these factors is most difficult to obtain from the patient.

We cannot always be sure whether pain is of genital or extragenital origin. We can, however, usually differentiate between anatomically normal and abnormal pelvic organs. We can refuse to operate except where definite disease entities exist. The only exception is exploration in the presence of prolonged and persistent pain of obscure origin. Unfortunately, even in such cases, we will in the majority find no pathology.

Presacral sympathectomy must be reserved for those cases that have been carefully selected and are proven to be true primary dysmenorrhea, or at times in endometriosis where conservative surgery can be done but some continued pelvic pain can be expected.

Where no pathology is found on examination of patients complaining of chronic pelvic pain, we must not do meddling surgery, for if we do we must remember that such patients will still have pain.

The internist can help by always including as part of his physical examination a pelvic and rectal examination. If he does not feel himself qualified to interpret any abnormal findings, then he should refer his patient for proper pelvic examination and diagnosis.

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# The Role of Intervertebral Disc in Backache

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I have only two points to make in this paper. First, pathology in the intervertebral disc causes 75 per cent of orthopedic backaches; and second, the history in these cases is sufficient to make a diagnosis and to indicate treatment. I believe that emphasis of these two conclusions will materially aid our interpretation of the complaint, prevent our wandering in a therapeutic labyrinth, and save us the embarrassment of having our patients stray to more mechanically and less scientifically trained practitioners.

It is easily understandable why we physicians have had a muddled concept of backache when we realize that the pathological basis for an adequate understanding of it was promulgated only 15 to 20 years ago by Orthopedist Barr and Neurosurgeon Mixter of Boston. Previous to that time, every specialty accepted backache as its province, and it was treated by the dentist with tooth extraction, by the E.N.T. department with tonsillectomy, by the internist with sodium salicylate, by the urologist with kidney suspension and prostatic massage, by the general surgeon with hemorrhoidectomy, by the psychiatrist (probably effectively) by the daily hour's rest on a couch, and by the gynecologist with uterine suspension. If the patient ever got to an orthopedist, he was treated with arch supports just as effectively as he was treated by all the other branches of medicine.

The role of the intervertebral disc, gradually clarifying, has converged our attention to the seat of the pathology and has dispelled previous confusion of our attack on the symptom. Barr and Mixter, in their original paper, attempted only to explain the pathology of some of the cases of sciatic pain. In describing what they thought to be the pathology of an occasional case of sciatic pain, they not only explained most cases of sciatic pain but also most cases of low back pain.

We recently analyzed a large group of patients complaining of low back pain. Competent physicians had previously eliminated from this group possible extraneous pathology, and these patients were referred to us as orthopedic problems. To be concise, and as an aid to memory, the percentages which follow are approximate and are reduced to round figures.

Seventy-five per cent of these orthopedic back-

aches we diagnosed as secondary to mechanical-degenerative pathology of the intervertebral disc. Fifteen per cent were due to mechanical abnormalities which were congenital or developmental, as spondylolysis, spondylolisthesis, transitional vertebrae, vertebral osteochondrosis, and other less frequent anomalies. The remaining 10 per cent were due to disease processes in the spine or its motors such as infections, new growth, arthritis, myositis, fibrositis, etc. As you can see from our findings, arthritis has lost its pre-eminent position and has receded to a minor role in diagnosis of low back pain.

Because the intervertebral disc is the offender in so large a proportion of patients complaining of low back pain, it deserves careful study, consideration, and understanding. The understanding of disc pathology makes comprehensible many previously mysterious incidents such as the instantaneous onset of symptoms, the frequently substantiated good results of manipulation, the symptomless intervals between attacks, the relief with recumbency, and the location and character of sciatic pain. When the pathology of the intervertebral disc is well understood, the unity of the syndrome is apparent, and sciatic pain is seen to designate only the site of pathology rather than a difference in pathology. Sciatic pain and backache are in these cases manifestations of the identical pathological process.

The primary functions of a disc are to support weight and to allow movement between the bodies of two adjacent vertebrae. To so function the disc is composed of two parts, the nucleus and the annulus. The nucleus lies near the center of the disc and, as a mass of semiliquid material, being incompressible, bears the superimposed body weight. The annulus surrounds the nucleus and is composed of concentric rings of fibrous tissues. These rings, being compressible and elastic, allow movement. The nucleus and the annulus combined form a machine which functions as a hydraulic ball bearing. The machine works because the annulus, being compressible and elastic about the circumference of the disc, allows movement between the two vertebral bodies while confining the nucleus in the center of the disc to support weight.

The normal disc, in transverse section, can be compared to the cut surface of an onion with the rings of the annulus corresponding to the layers

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of the onion. These rings are regular with fairly distinct outlines, gradually losing their detail as they merge centrally into the nucleus. In an adult degenerated disc, however, the appearance is quite changed and, instead of looking like a section of an onion, looks more like a mass of combed wet paper. The rings of the annulus lose their distinctness and pattern and lie as friable, wavy, irregular, incomplete bands without precision in structure. The nucleus also changes in appearance as it loses some of its moisture.

It is interesting and important to consider the blood supply of the disc in relation to its early degeneration. In infancy the disc is supplied by vessels passing from the cancellous vertebral bodies through the cartilage plates into the disc tissue. This blood supply is obliterated gradually over a period of years, and by the age of 20 completely disappears. The disc thereafter is dependent upon diffusion of the body fluids from contiguous areas for its nutrition. With this inadequate nutritive supply, the degenerative processes are inevitable and occur both in the annulus and in the cartilage plates. With progressive degeneration the annulus loses its elasticity, and the loss of its elasticity seals its fate, and it lies unprotected by its normal resilience, awaiting its rupture by any sudden force or by the constant erosion of normal functional strain.

It is impossible to describe exactly the mechanics of the involved disc in the course of an episode, but pathological specimens and operative findings may be correlated with the symptoms to deduce a reasonable sequence of events. The friable annulus gives way at some point in its circumference, weakening its ability to maintain the nucleus in its central position. The nucleus is propelled into the crevice or bulge in the annulus. With the shift of the nucleus from its central position, the vertebrae are no longer held parallel to each other. The fulcrum of the joint, the nucleus, now lies anterior, posterior, or lateral, and the two long arms of the lever, the vertebral surfaces, approximate with widening of the short arms. With widening of the short arms, tension is placed on the intervertebral ligaments with resulting pain. There also occurs simultaneously a shift in the relationship of the facets with tension on their ligaments. Because of the ligament tension pain, and because of the inherent tendency of muscles to protect unstable joints, the muscles become rigid and spastic in an effort to immobilize the involved vertebrae. Thereafter, one of two events occur which result in transient recovery. Either the ligaments stretch to accommodate the newly acquired relationship of the vertebrae, or the nucleus migrates back to its original position near the center of the disc, as a result of release of

muscle spasm and the constant massaging action of the vertebrae.

Repeated attacks deepen the rent in the annulus until eventually the nucleus herniates through the rent and lies under the intervertebral ligament, similar to an inner tube protruding through a rupture of the fabric of a tire casing and bulging the overlying rubber. After having established an extensive avenue of escape through the annulus, it is improbable that the nucleus will migrate back to its central position, though it is thought that it might do so. Constant pressure of the extruded nucleus against the intervertebral ligament results eventually in its rupture and the escape of the nucleus from between the vertebral bodies. After the nucleus escapes, the disc has lost the factor intended to carry weight, and the full weight falls on the annulus which, already degenerated, rapidly flattens. The disc also ceases to be a machine, capable of movement in all directions over the ball bearing nucleus, and what movement persists must be a gliding one for which the vertebrae were not constructed. The facets become jammed together as the disc flattens and then develop a degenerative, traumatic type of arthritis.

Whether the symptoms will be confined to back pain or will include sciatic pain will be determined by the location of the rupture of the annulus. If the rupture occurs posteriorly, the nucleus will bulge into the neural canal and, pressing on a nerve root, will cause pain along its course. The nerve root symptoms may subside if the protruding portion of the nucleus liquefies or if it becomes detached and migrates to a quiet area in the neural canal. Repeated protrusions may cause successive attacks. If the rupture occurs laterally or anteriorly, the nucleus escapes into an area where there are no nerve roots, and the symptoms are confined to the back. Late, however, after the disc has flattened sufficiently to narrow the intervertebral foramen, there may be pressure or irritation of the nerve root in the foramen with less well defined radiating pain. In a diagrammatic way the entire syndrome may be visualized in the accompanying chart.

This concept of the pathology of the disc correlates the variant symptoms as described by the patients and explains their mechanical implications. It explains the progression of the symptoms through successive attacks to the final stage of the complaint. It allows one pathological process to explain the divergent courses taken by different patients. It interprets the occasional dramatic relief achieved by manipulative therapy and the excellent results of surgery. It explains the pathology of 75 per cent of the orthopedic species of backache.

Trauma and degeneration are so interwoven in the pathological picture that it is difficult to assign

a predominant position to either. Discs in the middle decades of life showing no degeneration are the exception rather than the rule, as Schmorl pointed out, and these are the decades in which most backs become symptomatic. However, pre-existing degeneration is not an absolutely essential factor in the pathology; trauma alone without previous degeneration can be the only factor in the rupture of the annulus. This is proved at operation on the occasional case of herniated nucleus in young adolescents. These adolescent cases are infrequent, and they always give a history of significant strain. One of our patients, a 13-year-old epileptic, on recovering consciousness after a seizure, had severe sciatic pain, proved at operation to be a result of nerve root pressure from a nucleus herniated through a normal annulus. Another patient, a 13-year-old boy, had instant onset of sciatic pain in the course of a heavy lift, and he also had a nucleus herniated through an annulus which showed no pathological changes. Cases at this age, before degenerative changes have been initiated, are rare, but they prove that trauma has an integral part in the pathogenesis.

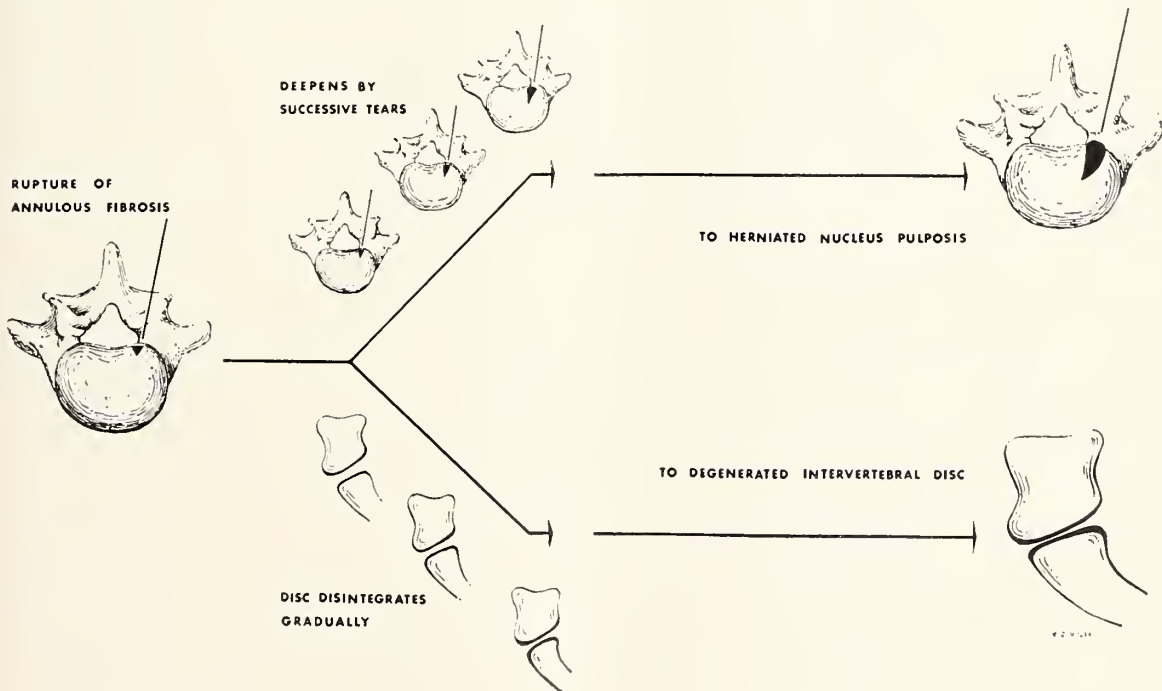
A homely simile may clarify our thinking about the roles of degeneration and trauma in precipitating symptoms. Termites may have quietly and inconspicuously destroyed the strength of the joists under a floor, and yet for all normal functions the floor remains competent. The presence of this degenerative process is unrecognized and may be evidenced only when a sudden strain, as a fall, results in the floor sinking. If the joists had not been weakened

by the termites, the floor would not have given way as a result of the fall. Likewise, if the fall had not occurred, the joists might have remained competent indefinitely. However, the termites probably would have continued their degenerative process of the joists, and the floor would have given way eventually by the application of some minimal force in the course of its normal use.

The degeneration of the annulus in the disc is similar to the weakening of the supporting joists in the floor. The instantaneous rupture of this degenerated annulus, precipitated by a lift, corresponds to the breaking of the joists by a sudden fall. The spontaneous escape of the nucleus without specific trauma is similar to the gradual sinking of the floor due to the slow dissolution of the joists.

The role of trauma in precipitating symptoms becomes an important factor, particularly in compensation cases. Considering the simile of the termite-infested floor and the teaching of Schmorl, one may conclude that in adults there usually is a pre-existing weakness of the annulus and the strain of a lift results in its rupture. Thus both strain and predilection are factors in an attack, as strain and predilection are factors in an inguinal hernia.

The symptoms of this syndrome are as familiar to you as are those of any other well-established pathological process and will not be described. When carefully considered, the symptoms obviously originate from mechanical pathology rather than from a disease process. The symptoms follow the course of mechanical principles, only slightly altered by the





reparative and recuperative faculties of the body, which are not possessed by a machine. Poor recuperative power presages a poor prognosis, once the pathological sequence has been initiated. Repeated attacks, gradually increasing in frequency, severity, and duration, and initiated by decreasingly violent traumata, may be predicted. Varying degree of invalidism are inevitable, not infrequently so marked as to preclude any rigorous occupation or avocation.

In treatment of the initial attacks and early stages, only conservative measures such as rest, support, physical therapy, etc., are indicated. After the course of the syndrome has been confirmed, the choices of treatment are few. However, in view of the benignity of the pathology in relation to life expectancy, the choice must be made by the patient and not be dictated by the physician.

A problem comparable to that of the owner of a worn-out jalopy confronts the patient with a disc syndrome. The car owner has four choices. First, the car may be used until it is functionless, and then nothing more can be expected of it. Second, the capabilities of the car may be established, and somewhat less than its capacity may be expected of it. It may carry a load of 500 pounds at 50 miles per hour without taxing it too greatly; and if a load of only 400 pounds is carried at 40 miles per hour, the car might function for a long time. Third, with a little tinkering such as cleaning the spark plugs, flushing the radiator, adjusting the carburetor, and wiring up the fender and the head lights, the car would probably perform better, at least for a time. Fourth, the car could be taken to a shop for a thorough overhaul and probably could be made proficient for a long time.

Following this simile, the patient who has a disc syndrome may follow similar avenues of approach. First, he may elect to do nothing about his back, continue his normal activities, and accept the occasional bout of pain and disability as the price he must pay for the fun and the work he has accomplished. For a patient of ordinarily sedentary occupation and avocations, this may be the wise solution of his problem. Second, he may establish the functions his back will tolerate and determine to maintain his functional level below that threshold. This may maintain a fairly valuable and comfortable occupational and avocational level for the patient, but it does not prevent the progressive degenerative changes and does imply a degree of invalidism. Third, the patient may accept some tinkering procedures such as a permanent support, exercises, rest periods, a springless bed, and the elimination of excessive strain. These procedures will probably improve his comfort and work capacity, but again they cannot correct or prevent the progress of his pathological

problem. Fourth, he may elect the overhaul job which is surgery. The surgical approach should include removal of the disc, if it is protruding posteriorly, and the fusion of the adjacent vertebrae.

X-ray diagnosis is of little aid in making the diagnosis or in determining the advisability of a surgical solution to these patients' symptoms. In fact, dependence on x-ray findings has been much of the reason for mistakes we have made in the past in diagnosis and therapy recommended. In the early and middle stages of this syndrome, there is usually no significant x-ray evidence of pathology, and the diagnosis depends primarily upon history and secondarily on examination. Only late, after the degenerative changes in the disc are far advanced, and usually only after many years of symptoms, does x-ray demonstrate significant narrowing of the disc. Waiting for x-ray evidence of pathology to make a diagnosis or to advise treatment is as unwarranted in these cases as it would be in cases of a torn meniscus in the knee. Given a history of a typical torn meniscus in a knee, no responsible surgeon would fail to make a diagnosis or advise treatment. He certainly could be considered amiss to await x-ray evidence of degeneration in the knee before making up his mind.

The intervertebral disc syndrome is as definite in its symptoms as is the syndrome of internal derangement of the knee, and it should be approached with an equally open mind, both in diagnosis and treatment.

This brings me to the second point I wish to emphasize. If the patient's history of back complaint is typical, it may be accepted almost invariably as *prima facie* evidence of a disc syndrome. Confirmatory physical findings are reassuring, and x-ray evidence is helpful, but history must be the primary support of the diagnosis. The history must be carefully taken and fully evaluated and, if consistent, confidently accepted.

To substantiate this point, we recently surveyed a comprehensive number of patients whose spines we had fused. Forty per cent of this group were operated upon purely upon the basis of a typical history, without confirmatory physical or x-ray evidence of pathology. Of this 40 per cent, 85 per cent achieved satisfactory results. Sixty per cent were operated upon who had not only confirmatory physical findings but also significant x-ray evidence. Satisfactory results were achieved in 92 per cent of this group. Thus, the results in the group without objective findings to support the diagnosis were essentially as good as in the group with objective findings. This seemed to us to be significant and to prove the point that a typical history of an intervertebral disc syndrome is diagnostic, regardless of physical findings or x-ray evidence.

When we accept the mechanical-degenerative internal derangement of the intervertebral disc as the etiology of the majority of back complaints, and

when we accept a typical history as proof of existence of that pathology, we will have come a long way in serving these patients.

## Thyroid Activity in Coronary Heart Disease

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There has been little published in the medical literature, to our knowledge, concerning the thyroid status in uncomplicated coronary heart disease, although there is considerable information on the relationship of thyroid status and serum cholesterol<sup>3, 4, 8, 9</sup> and the treatment of coronary heart disease by depressing thyroid activity.<sup>1</sup> This evidence, however, is insufficient to show what the thyroid status is in coronary heart disease.

The reports of Lerman and White,<sup>7</sup> in a limited series of patients under the age of 40 with coronary heart disease, suggested that the thyroid status was in the direction of hypothyroidism. Since this series was small, additional studies in evaluating thyroid status in a larger group were desired by Dr. J. Lerman and Dr. P. D. White. Starr's<sup>15</sup> earlier report of oxygen consumption in eight patients with coronary heart disease was too small for comparative purposes.

The thyroid status may be gauged by means of various tests, none of which in itself is an absolute yardstick. A combination of several of these tests would be of more value as an index to thyroid activity than a single test, since each test measures a different aspect of thyroid activity. This study has employed this principle of a combination of various tests in assessing thyroid function in patients who have had myocardial infarction prior to the age of 40. The tests are as follows:

- a. Basal metabolic rate
- b. Radioactive iodine excretion
- c. Serum cholesterol (total and esters)
- d. Serum phospholipids
- e. Ratios—cholesterol esters/cholesterol total, and total cholesterol/phospholipids

It is believed that a better insight into the thyroid status is obtained by these several tests, and it is unfortunate that several others were not included; namely, serum protein-bound iodine and thyrotropic hormone in urine (*infra vide*).

The purpose of this paper is:

- a. To present the findings of various tests on thy-

roid activity on 87 young males who had experienced myocardial infarction.

- b. To assess the thyroid status in these individuals.

- c. To consider the correlations between thyroid activity as measured by these tests and other measurable variables in the coronary disease group.

### METHODS AND MATERIALS

As a part of a larger and more inclusive study, the thyroid activity was studied by determining basal metabolic rate in 87 males who had experienced a myocardial infarction prior to the age of 40. Of this group, 21 had radioactive iodine studies. The lipid determinations presented in this paper have been discussed elsewhere.<sup>5</sup> These men, without exception, had experienced their infarctions at least six months prior to admission to the Massachusetts General Hospital for study, and all cases except five had returned to some form of activity. In order to study them, each patient was hospitalized for periods varying from 24 to 72 hours. The basal metabolic rate was determined under standard conditions by the thyroid clinic of Massachusetts General Hospital after the patients had been hospitalized the afternoon prior to the determination of the test.

The radioactive iodine excretion studies were done by the technique adopted in the Massachusetts General Hospital, which consists of administering to the patient 100 microcuries of radioactive iodine 131 (half-life 8 days), with 100 micrograms of inert sodium as a carrier. A small aliquot was taken for a standard. Urine was collected for 48 hours, divided in two 6-hour periods, one 12-hour period, and one 24-hour period with a total of 48 hours.

### RESULTS

#### I. VALUES OF BASAL METABOLIC RATE IN CORONARY HEART DISEASE

The results on basal metabolic rate determination on the 87 individuals are summarized in Table I. Unfortunately, matched controls are not available for purposes of comparison.

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TABLE I  
BASAL METABOLIC RATE IN CORONARY HEART DISEASE

BMR Values	Number
-30 to -26	4
-25 to -21	11
-20 to -16	14
-15 to -11	20
-10 to -6	17
-5 to -1	14
+1 to +5	4
+6 to +10	2
+11 to +15	1
Total 87	
Range -30 to +12	
Mean $\pm$ st. error -12 $\pm$ .9	

The summary illustrates the per cent distribution of various basal metabolic rates in this group which compares closely with the observations reported by Lerman and White.<sup>7</sup> The validity of these findings will be discussed, since the mean basal metabolic rate in the coronary heart disease group is certainly on the low side of accepted normal values. This reduced rate raises the question of whether it is due to: (a) a depressed thyroid activity, (b) failure of end organs to respond to thyroxin or thyrotropic hormone respectively, or (c) a failure of the standardizations used in basal metabolic rate determinations to correct adequately for body build.

## II. RADIOACTIVE IODINE STUDIES

The unique avidity of the thyroid gland for iodine provides a valuable means of studying the thyroid by the use of radioactive isotopes of iodine. This principle has been extended to the study of abnormal thyroid physiology (Hertz). The range of radioactive iodine excretion of 21 patients with coronary heart disease is included in Table II, which also presents the radioactive iodine excretion rates of Skanse, et al.<sup>11, 14</sup> in the various manifestations of thyroid activity for comparison with the coronary heart disease group. These results of the radioactive iodine excretion studies do not reveal any change from the euthyroid state.

TABLE II

a. Thyrotoxic	6—32 per cent excretion in 48 hours
b. Myxedematous	74—93 per cent excretion in 48 hours
c. Euthyroid	53—84 per cent excretion in 48 hours
d. Coronary heart disease group	51—78 per cent excretion in 48 hours

## III. SERUM LIPID CONSTITUENTS

The values for serum cholesterol levels in hypothyroidism and hyperthyroidism have been the subject of discussion for years, and it is generally accepted that cholesterol rises in hypothyroidism and decreases in hyperthyroidism.<sup>8, 10</sup>

Table III summarizes the lipid constituents in the coronary heart disease group as compared to the normal matched control group in this series, as well

as a comparison in hypothyroidism and hyperthyroidism which was obtained from the work of Foldes and Murphy<sup>4</sup> on blood lipids in thyroid disease.

TABLE III  
Mg/100 ml.  $\pm$  ST. ERROR

	No.	Cholesterol	Lipid Phosphorus	Cholesterol/Lipid Phosphorus
Coronary Heart Disease Group	87	286.5 $\pm$ 6.6	12.6 $\pm$ 0.26	22.8 $\pm$ 0.08
Control Group	97	224.4 $\pm$ 3.5	11.9 $\pm$ 0.13	18.8 $\pm$ 0.04
*Hypothyroid Group	7	414.1 $\pm$ 29.9	14.3 $\pm$ 0.64	28.7 $\pm$ 0.57
*Hyperthyroid Group	12	156.2 $\pm$ 22.5	7.5 $\pm$ 0.61	20.9 $\pm$ 1.15

\* Obtained from Foldes and Murphy's article on blood lipid distribution in thyroid disease.<sup>4</sup>

There may be some disagreement on the use of the lipids as an index of thyroid function, since it is not known whether the change in lipids is due to the individual's inherent characteristics causing him to be prone to coronary heart disease or to a slight change in thyroid activity. However, these results are included for completeness and will be discussed later in this paper.

## IV. CORRELATIONS BETWEEN BASAL METABOLIC RATE AND OTHER VARIABLES

The coefficients of correlation were calculated between basal metabolic rate and other variables such as uric acid, 17-ketosteroids, various lipids, age and body build. These correlations are listed in Table IV.

TABLE IV

Coefficient of correlation between basal metabolic rate and	
Uric acid	+ .11 $\pm$ .11
Cholesterol	+ .09 $\pm$ .10
Phospholipids	+ .10 $\pm$ .11
17-Ketosteroids	+ .19 $\pm$ .11*
Age	- .10 $\pm$ .11
Height	- .35 $\pm$ .11**
Weight	- .06 $\pm$ .11
Endomorphy	- .02 $\pm$ .11
Mesomorphy	+ .18 $\pm$ .10*
Ectomorphy	- .20 $\pm$ .11*

\* approaching significance

\*\* highly significant (Lindquist, 1942, p. 195)

These correlations indicate: (a) no correlation between basal metabolic rate and uric acid, (b) no correlation between basal metabolic rate and serum lipids, (c) a positive correlation between basal metabolic rate and 17-ketosteroids, and (d) a highly significant correlation in height, and (e) a correlation approaching significance in mesomorphy and ectomorphy. In coronary heart disease each variable is independent of the others, which explains those variables with no correlation.

## V. BASAL METABOLIC RATE AND 17-KETOSTEROIDS

The role of 17-ketosteroids in coronary heart disease has been discussed elsewhere by the authors.<sup>6</sup>

The correlation in a positive direction between basal metabolic rate and 17-ketosteroids corroborates the anabolic properties of androgenic materials.

#### VI. BASAL METABOLIC RATE AND LIPIDS

Since there is no correlation between basal metabolic rate and the various lipids in this series, this would also tend to show that these individuals are in a euthyroid state. Means,<sup>9</sup> using an example of a series of 70 patients from Mason et al.<sup>8</sup> on thyroid disease, reproduced their graph showing a high degree of association between basal metabolic rate and the cholesterol value in the two opposite pathological states of thyroid activity. Therefore, in euthyroid individuals, non-significant correlations would not be expected to exist, both falling within normal ranges. There are a number of arguments against this thesis by presenting other abnormal conditions such as Addison's disease where blood cholesterol and basal metabolic rate are both low. However, it should be pointed out that in such conditions all body functions are disturbed, and it is not a disease of thyroid, primarily, but a secondary effect.

#### VII. BASAL METABOLIC RATE AND PHYSIQUE

In the classification of physique into the three components of endomorphy (softness and roundness), mesomorphy (width, bone, and muscle), and ectomorphy (linearity), the somatotype method of Sheldon<sup>13</sup> was used.

The validity of the finding of the basal metabolic rate on the low side of accepted normal in the coronary group is questioned by the evidence that significant coefficients of correlation were found between basal metabolic rate and other variables of body build (Table IV). It is expected that an adequate correction for a given variable (as is done in basal metabolic rate determinations) would be shown by no correlation between that variable and the basal metabolic rate as computed. It is evident from Table IV that the formula seems to be adequate for the coronary heart disease group for age and weight. However, the significant negative correlation between basal metabolic rate and height indicates that the correction for this variable is inadequate. This assumption is substantiated by the negative correlation between basal metabolic rate and ectomorphs and the positive correlation between basal metabolic rate and mesomorphy.

#### DISCUSSION

The evidence presented here indicates a euthyroid status in the coronary group. As has been pointed out, the mean basal metabolic rate in the coronary disease group is on the low side of accepted normal values. However, the coefficients of correlation indi-

cate that the formula for basal metabolic rate has not been corrected adequately for this group. The basal metabolic rate is the percentage variation of oxygen consumption of an individual above or below the expected (calculated) oxygen consumption under basal conditions.<sup>2</sup> The expected oxygen consumption, or standards, have been empirically determined by considering the variables, age, sex, and surface area; the latter as derived by the height and weight of the individual, of a limited number of individuals. Of these variables, surface area would be the most prone to error, especially in the shortest and tallest individuals (the extremes of the distribution). In these individuals oftentimes the weight is out of proportion to stature and would, therefore, increase the error in estimating surface area. The coronary disease group has been shown to be predominantly mesomorphic; their linear measurements are decreased while the lateral measurements are increased. Seltzer<sup>12</sup> has shown that oxygen consumption in linear individuals is greater than their "lateral" counterparts; this observation is substantiated in this study by the findings of a negative correlation between basal metabolic rate and ectomorphy and the positive correlation between basal metabolic rate and mesomorphy. Therefore, it is reasonable to suggest that a basal metabolic rate of -12 in the predominantly mesomorphic individuals, as found in the coronary heart disease group, is normal for this type of individual and is in keeping with the theoretical considerations.

Probably the best work on the interrelationship of the lipids in thyroid disease is that of Foldes and Murphy.<sup>4</sup> In general, these authors also confirmed the findings that serum cholesterol is inversely proportional to thyroid activity, and they extended it to include other lipids. Thus, not only is cholesterol found to be significantly increased in hypothyroidism, but also cholesterol esters and phospholipids. The cholesterol esters/total cholesterol and total cholesterol/phospholipid ratios were significantly increased.

In hyperthyroidism these changes were not constant or significant (Table IV). The plasma phospholipids were decreased significantly, and the cholesterol was decreased absolutely. The resulting total cholesterol/phospholipid ratio was not different from the normal values given. The serum cholesterol (total), serum phospholipids and the total cholesterol/phospholipids ratios were increased in both the hypothyroid state and the coronary disease state. This would suggest moderate decrease in thyroid activity in the latter state. However, on analysis, the essential difference is the degree of increase of both constituents.

In hypothyroidism the serum cholesterol rises to unusually high levels, while the serum phospholipids do not rise proportionally; this accounts for the high total cholesterol/phospholipid ratio. In coronary heart



disease, the serum cholesterol is moderately increased and the phospholipids are but slightly increased, accounting for the moderately elevated cholesterol/phospholipid ratio. These various lipid components are significantly higher in the hypothyroid state, and these results would therefore reinforce the evidence submitted that there is no significant change from the euthyroid state in coronary heart disease.

In the small series (21 individuals) on whom radioactive iodine excretion studies were done, the results did not reveal any change from the euthyroid state.

#### SUMMARY AND CONCLUSIONS

1. The thyroid status in coronary heart disease was assessed through the use of multiple tests: (a) basal metabolic rate, (b) radioactive iodine, (c) interrelation of various serum lipids.

2. The basal metabolic rate was, on the average, on the low side of accepted normal. However, it was shown by correlation coefficients that such a reading is normal if morphologic characteristics are accurately considered and corrected when surface area is assessed.

3. From the studies made above, it was concluded that there is no alteration of thyroid activity from the euthyroid state in males who have experienced

coronary heart disease prior to the age of 40 and whose present average age is 38.5 years.

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WHATEVER America hopes to bring to pass in the world must first come to pass in the heart of America. The peace we seek, then, is nothing less than the practice and fulfillment of our whole faith among ourselves and in our dealings with others. This signifies more than the stilling of guns, easing the sorrow of war. More than escape from death, it is a way of life. More than a haven for the weary, it is a hope for the brave. This is the hope that beckons us onward in this century of trial. This is the work that awaits us all, to be done with bravery, with charity and with prayer to Almighty God.

—Dwight D. Eisenhower

## THE KANSAS PRESS LOOKS AT MEDICINE

*Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.*

### FREEDOM VERSUS SOCIALIZATION

In common with most other institutions of higher learning, the nation's medical schools face a problem. They must have more money if they are to do their tremendously important job. This fact was recently recognized by President Eisenhower, when he opened a 10-million-dollar campaign within industry and the medical profession which is designed to help the schools overcome deficits threatening their programs.

For many years we have heard an incessant demand by certain segments of society that the government should provide the necessary money and subsidize the schools. The President demolished that idea in a letter to the head of the National Fund for Medical Education in which he said that the medical school problem "should be solved through private rather than governmental means. Excessive reliance on government violates the essential principle of our free enterprise system. It falls, then, upon American business to assume a greater share of the responsibility for maintaining the institutions essential to our national health."

This reversal of the course pursued by the two previous administrations should receive the acclaim of all who still believe that the private enterprise system is the best for the American people. Certainly it should be obvious to all that government financing of medical education (and any other type of education) would involve government direction of how and where the money was spent. Advocates of government subsidization of education seem willing to risk bureaucratic dictation in return for handouts from the national treasury. They do not see, or perhaps don't care, that the whole medical educational picture could be catapulted into socialized medicine. And categorically, the whole educational system might be socialized.

Nothing like that is going to happen under the Eisenhower administration. The proponents of socialization may weep and wail and gnash their teeth, but the vote of the people last November gave a clear mandate: "Turn, Boys, We're Going Back"—to free

enterprise.—*Topeka Daily Capital, June 4, 1953.*

### HEALTH AND SOCIALISM

Mrs. Oveta Culp Hobby, secretary of the Department of Health, Education and Welfare, revealed that only 10 per cent of the amount needed by the voluntary National Fund for Medical Education is now available.

The fund was established to help medical schools pay their bills and to train more doctors and other health personnel. Mrs. Hobby told the American Medical Association that the schools' "financial crisis is still growing."

The fact that educational facilities for our future doctors cannot be given more than tiny bits of aid through voluntary contributions by corporations and individuals is to be regretted.

More to be regretted, however, is the fact that any move to allow the government to help the schools is immediately termed "Socialistic" by the organized medical profession and Mrs. Hobby herself.—*Kansas City Labor Bulletin, June 26, 1953.*

### HUMAN TOUCH IS ESSENTIAL

The newly-elected president of the American Medical Association has said, "although medical science has produced many drugs of near-miracle effectiveness in the last decade, I find that among the most potent of all medicines is still the human touch."

Here is one of the strongest of all the many arguments against socialized medicine or its variant, government dominated and directed medicine. Wherever these forms of medicine have been tried—and England is the best example for us Americans—the human touch has been largely destroyed. Neither doctor nor patient is any longer a free agent. The doctor must practice "by the book"—and the book is written and its rulings enforced by bureaucrats and politicians. The patient must also follow the book, and take whatever kind and quality of medical care the politicians in power decide he is to have, or do without. Doctors are overworked, under some sort of a panel system, and the result is assembly line medicine. There is little time for providing that all-important human touch—even as there is little time for research and study. The loss in both human values and scientific values is beyond measurement.

The goal of American medicine is to keep the human touch, to continue to give us the best medical care on the face of the earth and to gradually solve the economic problems of illness. That is what is being done here under the free system.—*Topeka Daily Capital, July 18, 1953, reprinted from Industrial News Review.*



## PRESIDENT'S PAGE

DEAR DOCTOR:

Progress in medical education is the basic premise upon which all medical societies are founded, and it has been through the constant expansion and widening of the base of that premise that our Society has survived and flourished.

With the ever increasing cost of producing sound medical teaching and research, individually and collectively, we are going to be faced with a greater responsibility in every aspect of medical education.

A few years ago, I happened to be present when the president of the A.M.A. called the House of Delegates into session and announced what they considered to be the most important decision ever made by the Board of Trustees, and that was a donation of some \$500,000 to the American Medical Educational Foundation. At that time they encouraged individual donations to this fund, either by sending contributions directly to the American Medical Educational Foundation or to the medical school of their choice. Those who choose to send their contributions to the A.M.E.F. can designate the medical school to which their grants are made.

In 1952 a total of 155 doctors of Kansas made contributions, either directly or indirectly, to the medical school of their choice. Of the 155 contributions, only 53 were made to the University of Kansas School of Medicine. The total sum of these contributions was \$5,226. In comparison with contributions to other medical schools, both in number and in size of contributions, our university did not fare very well.

As an expression of pride in our state and in our university medical school, it is my hope that in the report for 1953 each and every member of the Kansas Medical Society will be listed as financially supporting the American Medical Educational Foundation, and that all or part of each contribution will be earmarked for the University of Kansas School of Medicine.

A handwritten signature in cursive script, reading "Lucien R. Fyfe". The signature is written in dark ink and is positioned at the bottom of the page, below the main body of text.

## EDITORIAL COMMENT

### THE DOCTOR DRAFT ACT

The 83rd Congress amended the Universal Military Training and Service Act in sections pertaining to physicians and other specialized services in what is known as Public Law 84. It was signed by President Eisenhower and is currently in effect and will operate for a period of two years, beginning with July 1, 1953, and concluding on June 30, 1955. The new law, while retaining the general structure of the previous act, revises numerous sections, many of which will serve to benefit the individual doctor as well as communities.

Along with items that were not altered from the previous law is that it will still be necessary for all physicians, dentists, and veterinary surgeons who are not members of an armed service reserve component, and who are under 50 years of age, to register with their local draft boards. Men graduating from medical school will have 10 days in which to register, and may then ask for deferments for one year in which to complete their internships. All physicians must register under the doctor draft, even though they have previously registered for the regular draft. However, those who have registered under the doctor draft previously need not repeat that process.

Service liability is retained to the 51st birthday, as before. Unchanged also is the \$100 monthly extra pay for physicians, which will continue for those who are in the service during the next two years. Unchanged also are deferment mechanisms. As before, deferments are temporary and may generally be based only upon community hardship. Because of the relatively high rank and the bonus payment received by the medical officer, it is quite rare that he may obtain a deferment on the basis of personal hardship. Relatively few deferments will be granted residents. The practicing physician, if deferred at all, may expect this to be based on civilian needs for his services and, as such, it is for a short period of time to enable the community to obtain a replacement. As before, deferment requests are handled through the Kansas Volunteer Advisory Committee, of which Byron J. Ashley, M.D., Topeka, is chairman.

There are many small differences between the previous and the new regulations, but the primary alterations in the law occurred in two areas. Priorities have been changed. Previously, the doctor who had received a portion of his education under either A.S.T.P. or V-12 was permitted to count only such service as occurred following his government school-

ing. That has now been changed to where all service since September 16, 1940, shall be included in tabulating previous service, regardless of whether this came before or after government schooling. An illustration of this change might be drawn from the hypothetical case of the young man who served two years as a pilot in the Air Force and then went to medical school under A.S.T.P. The old act gave him no credit for previous military service and placed him in Priority I. Today such a physician would be in Priority IV.

Priority I remains as it was except for the explanation above. This includes those doctors who had schooling under A.S.T.P. or V-12 or those doctors who were deferred from service to continue their medical education and who have served less than 90 days, including internship or other periods of education since September 16, 1940.

Priority II has been changed. The former law classified this priority as those physicians who received government education under A.S.T.P. or V-12 or who were deferred from service to complete their education and who had served at least 90 days but less than 21 months. This has now been altered in the service requirement section to include those doctors who have served 90 days to 17 months. The difference here is in the four-months period. Today the doctor formerly in Priority II with more than 17 months of service will be classified in Group IV.

Priority III is unchanged. This includes all physicians under the age of 51 years who are not members of a reserve component and who have not served with the Army, Navy, Air Force, Marine Corps, Coast Guard, or United States Public Health Service since September 16, 1940.

Priority IV contains all other physicians under the age of 51 years except those in the reserve components. It consists of the veterans of World War II. Those in Group IV will be particularly interested in a further important change to the effect that no physician who has served 21 months may be recalled during the life of this act except in the case of a national emergency. It is possible to recall certain Group IV physicians, but since the lower categories must be nationally exhausted before this may be reached, it appears doubtful that any Group IV physicians will be called.

The second major change concerns the length of service that may be required. In most instances, the new tabulation favors the physician in that it shortens the period of service. According to the new law, the doctor who has credit for less than nine months, if called, will be required to serve 24 additional months. If his previous service was nine to 12 months, he will be recalled for 21 months. The



doctor who has previously been with the armed forces 12 to 15 months can be recalled for just 18 additional months, and, if he had 15 to 21 months previous service, he may be recalled for 15 months only. Then, as stated before, anyone having served more than 21 months is not liable for recall.

Of even more interest is that this is retroactive for those now in the service. The officer who would benefit by these new provisions may file an application through his branch of the service, and, depending upon his individual situation, will have his period of service reduced or terminated. Should he have completed his assignment, his release will be arranged as rapidly as possible, but in no event later than 90 days. It should also be noted that upon the completion of his tour of duty, the medical officer will, in all instances, be permitted to resign his commission and, in most situations, will be required to do so.

To complete the story of the new draft law, a few other miscellaneous items should be mentioned. This act makes it possible to count as prior active duty wartime military service spent with any World War II ally of the United States or in nonmilitary duty prescribed for conscientious objectors or service spent with the Panama Canal Health Department during World War II. It also is possible under this act to commission alien physicians as medical officers.

Finally, doctors shall be commissioned in grades commensurate with their professional education, experience, or ability. However, since the doctor draft law is part of the Selective Service Act, doctors are subject to the Selective Service system up to the time they accept a commission. Thereafter, their course is administered under regulations laid down by the armed forces. Selective Service is the means for obtaining induction, but once this has been satisfied the various branches of the service determine the grades that will be granted.

### LEGAL ASPECTS OF STERILIZATION

This is the second in a series of editorials that shall continue in subsequent issues on legal aspects of the practice of medicine. The first of this series, on the subject of fee splitting, appeared last month.

Physicians are frequently confronted with a request to perform a sterilization procedure. This article is prepared to advise the profession concerning the legality of such operations in this state. Kansas law, similar to the law on this subject in other states, is inconclusive. Therefore, even after the law is reviewed, the physician's liability remains in doubt. The rather long preliminary discussion may, at first, appear to be beside the point in question. It seems

necessary, however, to include this since conclusions are drawn from the following facts.

Kansas law covers the subject of sterilization under Chapter 76 of the General Statutes of 1949, beginning with Paragraph 149 and continuing through Paragraph 155. This law appears to have been on the books since 1913. It is important to note that the chapter heading is State Institutions. The above mentioned sections describe the manner in which sterilization operations may be performed upon inmates of institutions.

The superintendent or warden of certain named institutions in Kansas, if he has a person under his custody who he believes would be physically or mentally benefited thereby, or if he believes that the "... procreation by such inmate would be likely to result in defective or feeble-minded children with criminal tendencies, and that the condition of such inmate is not likely to improve so as to make procreation by such person desirable or beneficial to the state . . ." may request such person to be sterilized. This request is made in writing, and a Board of Examiners, consisting of the chief medical officer of such institution, its governing board, and the secretary of the State Board of Health, shall hold a hearing. The patient and his guardian are entitled to present testimony and shall be permitted legal advice in their defense. If, after such hearing, the board rules that sterilization shall be performed, a surgeon shall be selected to perform the necessary operation, and payment shall be made out of the budget of the institution involved.

If the operation is performed upon a male, it may be either a vasectomy or an asexualization. If a female, it may be either a salpingectomy or an oophorectomy. Then the final section dealing with this subject, 76-155, states the following: "Except as authorized by this act, every person who shall perform, encourage, assist in or otherwise promote the performance of either of the operations described in this act, for the purpose of destroying the power to procreate the human species, unless the same shall be a medical necessity, shall be fined not less than \$100 nor more than five hundred (\$500) dollars, and imprisoned in the county jail not less than six months nor exceeding one year."

The above discussion appears to be necessary because two distinct legal opinions prevail on this subject. One thought is that this law applies only to inmates of state institutions, and the last quoted section implies that no inmate of a state institution may be sterilized except in accordance with the above procedure. It is therefore reasoned that persons who are not inmates of state institutions are not covered by the provisions of this act, and, since sterilization is nowhere else mentioned in the Kansas law, there

are no legal provisions either permitting or denying the surgeon the right to perform such operations.

There are attorneys who hold a different opinion. They reason that the law specifically states that sterilization may be performed upon inmates of state institutions and that, by reason of the state having carefully outlined the procedure through which this may legally be performed, it must then be presumed that unless the operation conforms to all sections of this statute it cannot otherwise be done legally in this state. In other words, Section 155 says, "Except as authorized by this act . . ." and that all other sterilization procedures are illegal.

Regardless of which legal view the physician prefers to accept, one factor is certain. If the patient's health or the saving of his life requires such surgical procedures to be performed, and if the purpose of performing such operation is not for the prevention of procreation, then there is no doubt as to the legality of the procedure. The doubt arises over sterilizations that are performed for reasons other than medical necessities.

There is at least one legal opinion of interest on this subject in which the patient sued on a theory of breach of warranty because the operation did not have the desired effect. The principal issue was not concluded since it was thought that the operation was necessary to save the life of the plaintiff's wife.

In the absence of court rulings, the Kansas situation remains in doubt. It is a subject about which the individual opinions of the court might vary. It is also a subject upon which there is no established fact. Therefore, it appears advisable to suggest that, even if written consent of the husband and wife is ob-

tained, that fact is no protection should the operation be declared illegal. In other words, the physician who performs a sterilization procedure upon the request of his patient, and who cannot establish that this was performed on the basis of a medical necessity, has no legal protection in the signed release. Should the operation be ruled illegal, the fact that it was approved by the patient is no protection.

Finally, then, it appears that the Kansas courts might rule conservatively, and the physician who sterilizes an individual for any but definitely therapeutic reasons runs the risk that he is performing an illegal operation. This fact is not changed because the patient consents in writing to the operation or even requests it.

### AMERICAN MEDICAL EDUCATIONAL FOUNDATION

Among the more interesting recent projects of the American Medical Association is the organization known as the American Medical Educational Foundation. Every physician is familiar with the purpose of this foundation, which is to aid medical schools through voluntary contributions. The money is distributed to each of the 70-odd approved medical schools in this country on the basis of two separate formulas. And, furthermore, each contributor may assign his gift to the school of his choice if he cares to do so.

The need for establishing the American Medical Educational Foundation stems from the financial distress experienced by many medical schools. This,

### SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

James E. Crockett, M.D.  
1919 Olathe Boulevard  
Kansas City, Kansas

Albert F. Crumley, M.D.  
619 North Main  
Ottawa, Kansas

Donald R. Germann, M.D.  
4603 Melvin Street  
Kansas City, Kansas

William T. Holland, M.D.  
Winter VA Hospital  
Topeka, Kansas

Warren L. Krump, M.D.  
312 Northeast Avenue  
Oberlin, Kansas

Lester E. McGonigle, M.D.  
Potwin, Kansas

John W. McKay, M.D.  
3916 Willow Drive  
Wichita, Kansas

Charles W. Merten, M.D.  
630 Santa Fe  
Augusta, Kansas

William S. Mowrey, M.D.  
Luray, Kansas

William L. Padgett, M.D.  
301 South Maple  
McPherson, Kansas

Richard V. Polson, M.D.  
722 South Grove  
Wichita, Kansas

Marion A. Throckmorton, M.D.  
1026 Perry  
Wichita, Kansas

Richard N. Todd, M.D.  
916 West Pine Avenue  
El Dorado, Kansas



coupled with the long-standing hysteria over the shortage of physicians, has created considerable political interest in federal subsidies. Organized medicine, for reasons that are quickly obvious to everyone, opposed the general theory of federal grants, and, to obviate the oft-repeated criticism that medicine opposes everything but offers no concrete solutions, the A.M.A. undertook this project. Two full years have elapsed since its inception, and a recent tabulation of the work of this foundation appears to be of considerable interest and is summarized below.

Organizations such as pharmaceutical houses and other corporations have contributed handsomely, but included in this report are only those contributions received from practicing physicians. In the year 1951, the doctors of the United States gave \$91,000, but last year had increased their contributions to a total of \$291,000, representing a growth of 210 per cent. The list of individual contributors shows a still greater gain. In 1951, 1,876 separate checks were received. The list of individual physician donors in 1952 had grown to 7,259. The report listed the number of donations according to the several states. In many, including Kansas, the number of donors is very small, but there are examples in which a large percentage of all physicians made contributions. In Indiana, for instance, 1,217 individual doctors contributed to this fund last year. Nearer home, Colorado may be cited with 400 contributions totaling \$13,611.50. Nebraska is even more surprising with 474 contributions totaling \$49,146.25.

Against the above, Kansas has not been impressive. In 1952, a total of 19 doctors made gifts to medical education through this fund which totaled \$840. While this is certainly not indicative of the interest Kansas physicians have in medical education, nor in the preservation of freedom in medical schools, it represents a lack of interest in a most worthwhile project that should be supported by every Kansas doctor. The JOURNAL is advised that contributions may be of any size the physician wishes. The amount of money is not nearly so important as the number of donors, and in an effort to improve the Kansas situation in this regard it is respectfully requested that each doctor plan to take a part in this program during the coming year.

Even though the above does not place Kansas in an attractive position, there are at least three things that should be said to complete the story. The first, being in the form of an alibi, is that many states have records equally as poor. Of more importance, however, is the fact that the above does not present the total picture. Not listed among contributions credited to Kansas doctors were 136 gifts made directly to aid medical schools outside this fund. Even

if this figure is combined with the 19 listed above, it is still not good.

The report also tabulates how much money was donated directly to each of the medical schools. Here, again, the Kansas picture is not what it should be because through direct contributions the University of Kansas School of Medicine received \$5,226 from 53 contributors located throughout the United States.

There is one bright side to this picture in that numerous county medical auxiliaries have contributed sizable sums to the American Medical Educational Foundation. If this subject is of sufficient importance to the Auxiliary, with its relatively limited funds, it certainly should be wholeheartedly supported by the profession. The JOURNAL wishes to commend this project to the doctors of Kansas. If anyone desires further information on the subject, it may be obtained through writing the Executive Office of the Kansas Medical Society.

### PROGRAM FOR IMPROVEMENT

The following nine points were listed by the new president of the American Medical Association, Dr. Edward J. McCormick, Toledo, as an outline for his program of continued improvement in medical care for the nation:

1. The distribution of doctors is a problem. Much has been done by medical organizations to solve it. Placement services are now in existence in 37 states. Of these, 32 are operated by medical societies. It is important to the future of medicine that every community have access to a physician. Medicine must actively aid those communities which are trying to attract doctors.

2. Over 600 of our county medical societies now have 24-hour emergency call services. I urge all others to support such a system.

3. Every medical society must have a strong and fearless mediation committee to hear patients' complaints. These must not be whitewash committees. They must be true to the purpose of their founding by reprimanding and disciplining physicians found guilty of exploiting their patients. Only in this way can public confidence in medicine be maintained.

4. Physician and hospital relationships must be clarified and steps taken toward mutual cooperation. I advise the formation of physician-hospital committees by state and county medical societies to work toward better relations in local communities. This has already been done with some success in some states.

5. Every county society should become an active unit in the nationwide effort to develop and expand voluntary health insurance. We must find ways of

providing protection against catastrophic illness and coverage of older age groups.

6. Too many physicians have been isolationists within their communities. Local societies should encourage each individual member to participate in some civic undertaking. We physicians should be rendering health leadership in all service clubs, fraternal organizations, parent-teacher groups, church associations and unions.

7. Every doctor must be brought to realize that good public relations begins in his or her office—that the way in which they treat patients reflects for good or ill on the entire profession. Medical societies are frequently hampered in their efforts to build public understanding by the doctor who overcharges, the doctor who rudely refuses to answer a night call no matter how urgent, or the doctor who keeps patients waiting for hours in his reception room without any explanation.

8. There are some newspaper and radio people who honestly believe some of the untruthful charges which have been made against medicine. All county and state societies should make continued efforts to develop a close association with writers for press, radio and television.

9. There is a need for unity within the profession. I have noticed a distressing regression toward petty internal wrangling, charges and countercharges, and divisive activities by various groups within the profession.

## COUNTY SOCIETIES

Members of the Riley County Medical Society were hosts to the Golden Belt Medical Society at a meeting held at Manhattan on July 9. For the afternoon program Dr. Z. Miles Nason, Kansas City, spoke on "Medical Treatment of Alcoholism," and Dr. Maurice Snyder, Salina, discussed "Medical Management of Hypertension." A dinner and business session followed the scientific program.

Members of the Brown County Medical Society entertained their wives and medical assistants at a dinner meeting at the county hospital, Hiawatha, on July 3. Mr. Rueben M. Dalbec, executive assistant of the Kansas Medical Society, Topeka, was speaker of the evening, using public relations as the subject of his talk. A business session and a tour of the newly completed wing of the hospital concluded the meeting.

Dr. Roscoe T. Nichols, Hiawatha, who has com-

pleted 51 years in medical practice, was guest of honor at a dinner given at the Hotel Redmon, Hiawatha, on June 29, by the Brown County Medical Society. Fifty physicians and their wives from north-east Kansas were present. Dr. Winstan L. Anderson, Atchison, councilor for that district, was toastmaster. Tributes to Dr. Nichols were given by Dr. George Thacher, Waterville; Dr. Clemens Rucker, Sabetha; Dr. A. E. Cordonier, Troy, and Dr. Fred Wrightman, Sabetha. A response was given by Dr. Nichols.

## CHEST PHYSICIANS ORGANIZE

A Kansas Chapter of the American College of Chest Physicians was recently organized, and the following officers were elected to serve for the first year: president, Dr. Charles Pokorny, Halstead; vice president, Dr. A. L. Ashmore, Wichita; secretary-treasurer, Dr. C. J. W. Wilen, Manhattan, and program chairman, Dr. Andre Baude, Topeka. Governor for the state of Kansas is Dr. C. F. Taylor, Norton. At present there are 20 members residing in Kansas.

The College of Chest Physicians, founded in 1935, is an international organization. It endeavors to promote interest and research in diseases of the chest and the allied fields of cardiology, bronchoscopy, and radiology. The official journal of the organization is *Diseases of the Chest*, published monthly. It is the intention of the Kansas unit to provide a program on some phase of chest disease at the annual meetings of the Kansas Medical Society.

Inquiries regarding membership should be addressed to Dr. C. F. Taylor, State Sanatorium, Norton, Kansas.

## TO ORGANIZE PEDIATRIC SOCIETY

A meeting for pediatricians in Kansas, and all physicians interested in pediatrics, will be held at Emporia on September 19, and plans for the organization of a Kansas Pediatric Society will be discussed. Arrangements are being completed by a committee composed of Dr. C. T. Hinshaw, Wichita; Dr. William Crouch, Topeka, and Dr. David R. Davis, Emporia.

A scientific program, presented by out-of-state pediatricians, will begin at 10:00 o'clock and continue through the day, with a two-hour luncheon period devoted to round table discussions. The evening program will include a social hour, banquet, and business session.

Physicians interested in attending are asked to write immediately to Dr. David R. Davis, 103 Gazette Building, Emporia.



## ACTIVITIES OF MEMBERS

Dr. William C. McDermott, who has been practicing in Hays since November, 1952, has moved to Phillipsburg and is specializing in surgery there.

Dr. E. Grey Dimond and Dr. T. K. Lin, of the University of Kansas Medical Center, are co-authors of a paper, "Reliability of the Grading of Cardiac Murmurs," which was published in the July issue of *GP*, the publication of the American Academy of General Practice.

The Topeka Medical Center announces that Dr. John E. Sweeney is now a member of its staff, specializing in internal medicine. Dr. Sweeney had been practicing in Fargo, North Dakota.

Dr. John F. Coyle, Coffeyville, who is now serving at Gunter Air Force Base, was among volunteers who administered gamma globulin to 30,000 children in Montgomery, Alabama, to combat an outbreak of poliomyelitis.

Dr. Mary T. D. Glassen, Phillipsburg, announces that Dr. Barbara Calderwood is now associated with her in practice. Dr. Calderwood, who was graduated from the University of Kansas School of Medicine in 1952, recently completed her internship at Menorah Hospital, Kansas City, Missouri.

Dr. James E. Henshall, Osborne, has been appointed coroner for Osborne County to succeed Dr. W. K. Nickell, who was recently called into military service.

Dr. G. M. Martin has returned to his position as director of the Division of Maternal and Child Health, Kansas State Board of Health, after an absence of a year spent at Harvard University acquiring a master's degree in public health.

The city of Ellsworth observed "Dr. Alfred O'Donnell Day" in June in connection with the dedication of the new addition to the Ellsworth County Veterans' Memorial Hospital. Dr. O'Donnell, who retired in 1948 after practicing in Ellsworth for 41

years, was honored for his participation in many civic affairs.

Dr. William C. Menninger, Topeka, was one of 17 specialists throughout the nation selected to serve as senior civilian consultant to the Surgeon General, Department of the Army, effective July 1, 1953. Dr. Menninger will be consultant in psychiatry and neurology.

Dr. Farris D. Evans, Wichita, was re-elected department surgeon of the state V.F.W. organization at a recent meeting held in Goodland, and he was also elected delegate to the national encampment to be held in Milwaukee this month.

Dr. Henry G. Hurtig, Hanover, who retired several years ago because of poor health, was the subject of a feature story in the *Hanover News* on July 3 in observance of his 69th birthday. Before his retirement, he had practiced in Hanover more than 30 years.

Dr. Fred W. O'Donnell, Junction City, was one of the speakers at the recent centennial celebration at Fort Riley.

Dr. William E. Brownlee, who has been practicing in association with his father, Dr. John J. Brownlee, in Hutchinson during the past four years, has begun a four-year residency in surgery at the University of Kansas Medical Center.

Dr. Laurel G. Case, who was recently called into service, announces that his office in Enterprise will be kept open during his absence by Dr. T. L. Lothman. Dr. Lothman is a graduate of the University of Kansas School of Medicine and recently completed his internship there.

Dr. Mary T. D. Glassen, Phillipsburg, spoke on the subject of health before a recent meeting of the county farm bureau at the Logan high school auditorium.

Dr. Ben L. Myers, who retired from active practice in Iola after suffering a stroke last fall, is visiting in San Francisco and is planning to make his home in that vicinity.

Dr. Otis H. True, who has been practicing in Hays, has moved to Kansas City to take special work at the veterans' hospitals there and in Leavenworth.

Dr. R. Burnley White, who has been practicing in Hanover, has announced that he will open an office in Phillipsburg late this month.

Dr. Franklin D. Murphy, chancellor of the University of Kansas, was one of the delegates from the United States to attend the World Health Assembly in Geneva, Switzerland, this summer.

Dr. Arnold M. Pederson, who recently completed a year at the State Sanatorium, Norton, in special training in diseases of the chest, opened an office last month in Plainville in association with Dr. Vale Page. Both were 1951 graduates of the University of Kansas School of Medicine.

Dr. F. S. Brenneman, who has been practicing in Moundridge, is on his way to Pago Pago, Samoan Islands, for a two-year term in public health work.

Dr. R. R. Nevitt, who has been practicing in Moran for 12 years, has moved to Fort Scott and is practicing there at the Fort Scott Clinic.

Dr. Florence Friesen, who has practiced in Greensburg for seven years, after spending 25 years as a medical missionary in India, has moved to Moundridge and has taken over the office formerly used by Dr. F. S. Brenneman.

Dr. Alfred M. Tocker, formerly of the department of surgery at the University of Kansas Medical Center, has opened an office for private practice in Wichita.

The Eddy Clinic, Hays, announces that Dr. Eugene Siler, formerly of Topeka, is now a member of its staff.

The office of the late Dr. Harold J. Bagby, Coffeyville, has been reopened by his son-in-law, Dr. Rob-

ert G. Wood, a graduate of the University of Kansas School of Medicine who recently completed his internship at Providence Hospital, Kansas City.

Dr. George L. Basham, who has been practicing in Eureka since his return from service in the Navy during World War II, has moved to Abilene and is now practicing there.

Dr. Joseph E. Gootee, who has been serving in the Air Force, has been released from the service and has returned to the practice of anesthesiology in Topeka, in association with Dr. Floyd C. Taggart and Dr. W. O. Martin.

With progressive improvement in treatment, fewer tuberculosis patients are dying of the disease. Therefore, for isolation treatment in hospitals, for after-care, and for rehabilitation, we will probably continue to require more, not fewer, beds for some time to come.—*Public Health Reports, July, 1952.*

## DEATH NOTICES

CHARLES MOONEY FITZPATRICK, M.D.

Dr. C. M. Fitzpatrick, 74, an active member of the Saline County Medical Society, died in Salina, July 10, after several months of illness. He specialized in radiology and had practiced in Salina since establishment of a department of radiology at St. John's Hospital in 1915. He was a graduate of the University Medical College of Kansas City. During World War I, Dr. Fitzpatrick served in the medical corps of the Army. He was a member of the Radiological Society of North America, Inc.

CLYDE O. MERIDETH, JR., M.D.

Dr. Clyde O. Merideth, 46, president of the Lyon County Medical Society, died at his home in Emporia, July 26, after an illness of several months. He was graduated from the University of Kansas School of Medicine in 1931, and for five years practiced in Elkhart before opening his office in Emporia. He specialized in obstetrics and gynecology.

Dr. Merideth was greatly interested in the Boy Scout organization and was president of the Jawhawk Council. He had received virtually every award given to Boy Scout leaders.



# Tumor Conference\*

## Problems in Diagnosis and Treatment of Bone Tumors

Edited by H. I. Firminger, M.D., and Irwin Joffe, M.D.\*\*

Dr. Helwig: This conference should serve to illustrate the difficulties in the diagnosis of certain lesions of bone clinically, roentgenologically, and pathologically. May we hear about the first case?

CASE NO. 52-112

Dr. L. O. Litton: The first case is that of a 15-year-old white girl, admitted to the hospital on October 26, 1952, complaining of pain and swelling over the lateral posterior aspect of the right fibula of about 2½ months' duration. Since the onset of this complaint, both swelling and pain had increased. Past history revealed "growing pains" in the right thigh and calf about one year prior to admission.

The physical examination was essentially negative except for examination of the right lower extremity. There was an indurated 4 by 8 cm. mass over the posterior lateral aspect of the head of the right fibula. There was some redness around this area, and it was very tender. There was no lymphadenopathy. The chest was clear to percussion and auscultation.

The results of urinalysis were normal. Blood count revealed 4,260,000 red cells, 8,350 white cells, 73 per cent hemoglobin, and normal differential. X-ray examination showed a rather characteristic destructive lesion, which was interpreted as osteogenic sarcoma. The chest x-ray was negative.

On the day following admission the mass was biopsied, and this revealed osteogenic sarcoma. On November 3, 1952, a mid-thigh amputation was done, and the patient's postoperative condition is very satisfactory.

Dr. Helwig: Dr. Tice, would you please discuss the roentgenograms in this case?

Dr. Tice: Several points are worth stressing. First, there is definite bone destruction at the upper end of the fibula. Second, there is bone formation out in the soft tissues arising from the upper end of the fibula, adjacent to the destroyed area. Another point is that the tumor is located about the knee; most osteogenic sarcomas occur near the knee, in the lower femur, or upper end of the fibula or tibia. The last point to be emphasized is that the tumor has occurred in a young person. Because of the characteristic x-ray picture, we diagnosed it as an osteogenic sar-

coma. There is one thing lacking that does tend to make a lesion of this type characteristic, and that's the formation of a triangle at the lower end of the tumor, the so-called Codman's triangle, which is not invariably present.

Dr. Helwig: Would you like to comment on the question of preservation of the shadow of the old shaft?

Dr. Tice: The old shaft is often preserved; as a matter of fact, I can't see any break in the shaft. The break that I see in the films seems to be a central type of destruction. Another point that is sometimes stressed is the manner of laying down of new bone. We look for the sunburst effect, spicules of newly-formed bone oriented at right angles to the shaft; a hint of that effect is seen in these films, but this finding is not required in order to make the diagnosis. Kolodny,<sup>1</sup> who summarized a group of these cases, found it in 18 per cent of his cases; thus, any bone formation, whether it is the sunburst pattern or simply laid down in an amorphous manner, is of significance. And the most important finding of all is not the bone formation, but bone destruction; many of these tumors are purely osteolytic.

Dr. Helwig: Thank you, Dr. Tice. Dr. Boley, would you tell us about the pathological findings in this case?

Dr. Boley: Examination of the gross specimen revealed a friable, dull gray, fungating mass 5 by 3 cm., affixed to the head of the fibula. The bulk of the tumor lay outside the cortex of the bone, elevating the periosteum.

Microscopic slides of the biopsy specimen showed pleomorphic tumor cells, many of them multinucleated, growing wildly in fibrillar stroma. In some areas formation of osteoid and bone was observed, while elsewhere there was focal deposition of calcium. Mitotic figures and giant nuclei were frequently observed.

Sections from the amputation specimen showed the same type of tumor cells invading the medullary cavity, the cortex, and the muscle adjacent to the fibular head. Cartilagenous stroma was found in some areas, and bone production was noted in many places. The pathological diagnosis was osteogenic sarcoma of the sclerosing type.

Dr. Helwig: Dr. Weaver, would you comment on this case?

Dr. Weaver: This is a reasonably early case of

\* Cancer teaching activities aided by a grant from the National Cancer Institute and the Kansas Division of the American Cancer Society.

\*\* Trainee of the National Cancer Institute.

osteogenic sarcoma. The patient had pain and a tumor mass; these, plus the fact that she was in the younger age group and had the x-ray findings that we have seen, caused us to suspect strongly that she had an osteogenic sarcoma. Then the next step in management was to secure a biopsy. My feeling is that a biopsy in no way lessens the patient's chance for life. The only complication to be expected following biopsy of a malignant tumor results from delay in amputation; in that instance, the tumor may burst through the biopsy site. There are some advocates of local resection of malignant bone tumors. I don't belong to that school. I think in rare selected cases it constitutes proper treatment, but in most cases amputation is required. In this case the tumor had extended into the soft tissues. Local resection, though it would have preserved the function of the limb, would also have invited recurrence. Even with amputation, this patient's chances for survival are not good. In over 100 cases that we have followed, there have been only a few survivals. It was once my opinion that cures of osteogenic sarcoma varied inversely with one's diagnostic ability—that is, if a case was "cured," the diagnosis had been wrong. I had not seen an undoubted case of osteogenic sarcoma that survived. I have now seen several. Despite the fact that therapy is unchanged, we have had no deaths in the eight cases of osteogenic sarcomas of the extremities that we have seen since 1945.

Dr. Helwig: Will you present the second case, please, Dr. Litton?

#### CASE NO. 52-113

Dr. Litton: This 10-year-old white girl was admitted to the hospital complaining of pain in the right shoulder. She had first started to have pain in the shoulder about 3 months prior to admission, but the pain was not severe enough to inhibit her in any of her normal activities. About one week before admission, however, the shoulder became much more painful. She had a poor appetite and had lost a little weight. She had no chills, no fever, and no other joints were involved.

Physical examination showed a girl rather small and thin for her age. There was tenderness over the region of the deltoid insertion of the right humerus and pain with external rotation. There was a firm mass palpable on the anterior surface of the humerus about two inches below the coracoid. There was no redness, and there was no swelling about this area and no regional lymphadenopathy. Laboratory work was essentially negative, and the patient had brought x-rays with her which showed a destructive lesion in the head of the right humerus.

Under general anesthesia a biopsy of the lesion was done, and the area was completely curetted. The

postoperative course was uneventful. She was seen again about five months later, and an x-ray of her humerus at this time showed a picture which was rather indicative of malignant tumor. Her subsequent course in the past two months has been entirely uneventful.

Dr. Tice: I have not examined the original films. They were reported as showing an inflammatory process. My comment is that if I had not had that report, I would certainly have considered the postoperative films indicative of tumor, because they show a destructive process without sequestration. The picture is distorted by the surgical procedure. The picture to me is that of a destructive process, no bone production, no sequestration. It looks like a malignant process more than an osteomyelitis.

Dr. Helwig: Dr. Boley, what did the biopsy look like?

Dr. Boley: The microscopic sections showed fragments of necrotic bone and marrow spaces that often contained excessive amounts of fibrous tissue. Scattered lymphocytes, monocytes, plasma cells, eosinophiles, and polymorphonuclear leukocytes were found. Evidence of bone formation was noted in places. Osteoblasts and fibroblasts were uniform in size and shape. Our interpretation was chronic osteomyelitis.

Dr. Helwig: Dr. Weaver, would you tell us about the postoperative course?

Dr. Weaver: Our cultures at the time of operation were negative. There was no subsequent drainage, and the cavity in the humeral head is now almost obliterated; this course confirms the inflammatory nature of the process.

Dr. Helwig: There was never any record, was there, Dr. Weaver, of her having any fever, leukocytosis, or unusual pain suggesting a bout of acute osteomyelitis?

Dr. Weaver: Nothing other than some pain.

Dr. Helwig: Would someone like to comment on the differential diagnosis between Garré's chronic osteomyelitis and some bone tumors, particularly Ewing's, and even osteogenic sarcomas?

Dr. Schloerb: Would one not add syphilis to that list?

Dr. Helwig: Do you mean as a possible diagnosis here? Yes, particularly syphilis can be easily confused with reticulum cell sarcoma. There was an exhibit, I think it was at the meeting of the Academy of Orthopedic Surgery, less than a year ago, wherein that was brought out as a very difficult differential diagnosis, particularly since in syphilis and in some bone tumors they are apt to have the classical osteocopic night pains, which in the old days was thought to be practically diagnostic of syphilis. A great many



of those patients who were questioned had a few mercury treatments and they did pretty well.

Often Garré's sclerosing osteomyelitis is confused with Ewing's endothelioma, because both will have fever and both will have leukocytosis, and pain, and both will have involvement of a fair-sized portion of the shaft at times. In operating upon Ewing's tumor, one is apt to encounter bubbles of purulent appearing material oozing out through the periosteum. Anatole Kolodny<sup>1</sup> emphasized this difficulty in differential diagnosis. The "pus" in Ewing's sarcoma, of course, is sterile; but, with preoperative administration of antibiotics, it isn't uncommon to see "sterile" pus in osteomyelitis. Now we rarely see acute fulminating osteomyelitis with high fever and septicemia.

Dr. Tice, would you like to comment on the differential diagnosis from the x-ray standpoint?

Dr. Tice: I think that Garré's sclerosing osteomyelitis and osteogenic sarcoma are very difficult to differentiate. We have in the past followed a case or two in which there was a sclerosing fusiform type of tumor at the lower end of the tibia which failed to progress like a malignant tumor. It was not biopsied and was thought to be sclerosing osteomyelitis. We have also had one case of so-called "quiet necrosis" or serous osteomyelitis which in some respects resembled this case. There was no clinical picture of osteomyelitis. It had a shaggy type of periosteal bone production at right angles to the shaft. Our first impression was that it was an osteogenic sarcoma. When we got adequate films, we could see the shaggy periostitis involving the entire shaft. It was diagnosed osteomyelitis because of the presence of sequestration. I think Ewing's tumor may be difficult to differentiate from osteomyelitis, clinically and radiologically. In Ewing's tumor our first impression may be osteomyelitis, and later on, when a biopsy is done, it proves to be a tumor.

Dr. Weaver: For a number of years, until the x-ray plates were lost, I had taught my students by showing them a case of a typical "Ewing's tumor" that we had x-rays of. Actually, the case was one of osteomyelitis, but it was the only typical "Ewing's" that I had in the place. It was proved an osteomyelitis at biopsy, and it cleared up. I followed the child for several years.

Dr. Stoddard: I'd like to ask a question about this case. Did this girl have preoperative antibiotic therapy?

Dr. Weaver: She did not.

Dr. Stoddard: I wonder if it is usual or unusual to find this kind of localized, apparently low grade, chronic osteomyelitis in a child, or is that more common in adults; is this an example of what has been called Brodie's abscess, or is that another entity?

Dr. Weaver: It's not exactly uncommon to find these things in a child. I think in this case one might call this a Brodie's abscess.

Dr. Helwig: Let's have the last case, Dr. Litton.

#### CASE NO. 52-114

Dr. Litton: This case is that of a 21-year-old white man, who was admitted to the hospital complaining of pain and swelling of the lower lateral aspect of the right femur and intermittent aching of the knee joint for six months. This pain became more frequent and more severe until about six weeks before admission, when it became almost continuous. During the month prior to admission, he had noted a loss of about 20 pounds weight, loss of appetite, general malaise, and irritability. Physical examination was negative except for tenderness in the right supracondylar region of the right femur on the lateral aspect. There was moderate swelling of the knee. The laboratory work was essentially negative. Amputation was done in November, 1951, and the postoperative course was uneventful. The patient has remained symptom free.

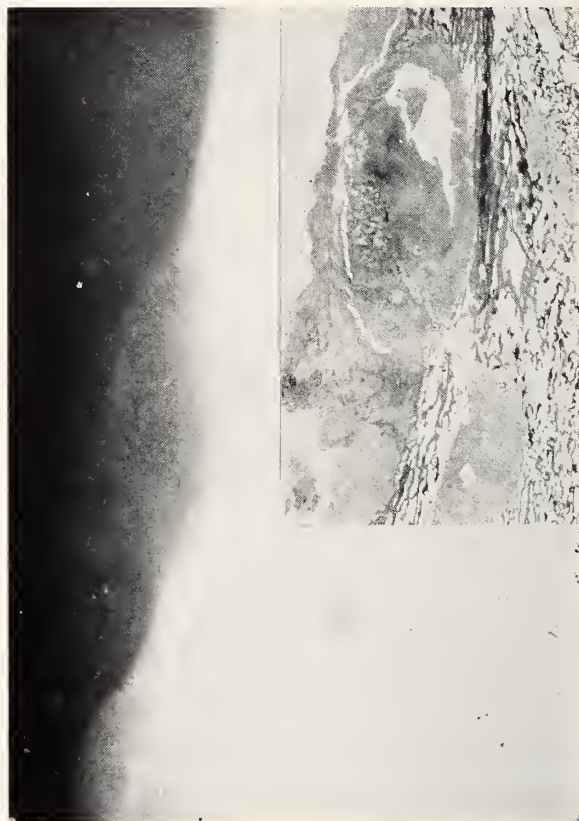


Figure 1. Case No. 52-114. X-ray of lower end of right femur showing hemispherical tumor mass on lateral aspect with destruction of the cortex and slight new bone formation at the limiting margin. Inset: Photograph (without magnification) of a hematoxylin and eosin stained gross section through the lesion shown by the x-ray.

Dr. Helwig: Dr. Tice, can you tell us about the x-rays?

Dr. Tice: One film (Figure 1) was made at Independence Sanitarium and was interpreted by Dr. Bowser as a malignant bone tumor. Films made in our department occasioned considerable discussion but were reported as showing malignant bone tumor. I couldn't quite see in them the typical picture of osteogenic sarcoma. The cortex is expanded locally, forming a "bubble" on the silhouette of the femur. There is some destruction, I will grant, in the expanded area behind that. I do not see bone production in the soft tissues. The cortex outlines the tumor but appears to contain it. I was inclined to consider it an osteochondroma or possibly an osteochondrosarcoma, but I didn't think it was a classical osteogenic sarcoma. I am afraid I was wrong.

Dr. Helwig: Dr. Boley, what were your findings?

Dr. Boley: The gross specimen (Inset, Figure 1) showed a great deal more than the x-ray film did, in that the cortex was destroyed by an ovoid, soft, friable, dark brown tumor mass measuring 3 by 2 cm. and situated 9 cm. from the proximal line of excision of the femoral shaft.

Microscopic sections (Figure 2) showed spindle-shaped tumor cells associated with multinucleated giant cells and irregular fragments of osteoid and bone bursting through the cortex of the femur and

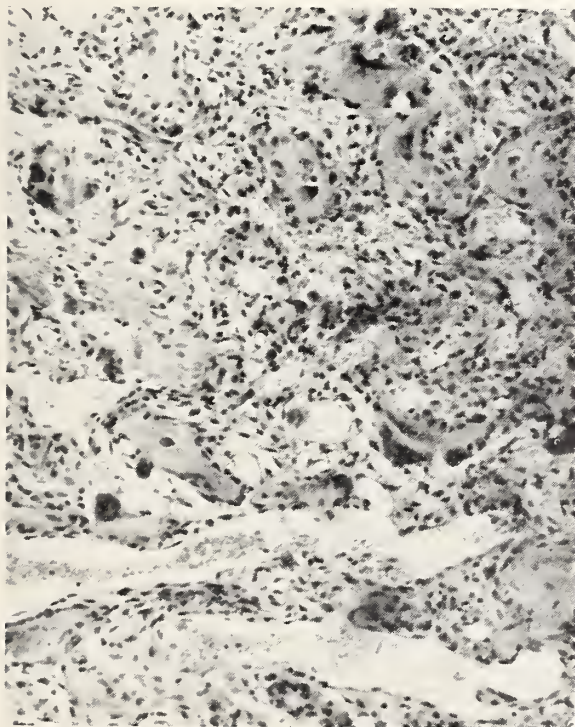


Figure 2. Case No. 52-114. Hematoxylin and eosin stained section of tumor showing disorganized proliferation of osteoblasts with irregular osteoid and new bone formation, scattered giant cells and marked vascularity. X 160.

invading the surrounding muscle. Tumor was also found invading the medulla. Again the diagnosis was sclerosing osteogenic sarcoma.

Dr. Helwig: What was the character of those stromal elements in between the newly-formed bone spicules?

Dr. Boley: Most of these cells were of the spindle cell type; some of them were a little larger, plumper cells.

Dr. Helwig: Were there any embryonic osteoblasts there? How do you differentiate this lesion from fibrous dysplasia?

Dr. Boley: There is too much cellular variation for a simple fibrous dysplasia. We have multinucleated giant cells in some places which probably represent osteoblasts in this tumor.

Dr. Helwig: Well, my reason for bringing it up is that I've seen cases of fibrous dysplasia do exactly the same thing with marked metaplastic bone production. I think the gross picture here is adequate for diagnosis without the sections, and I think it should be re-emphasized that the diagnosis of osteogenic sarcoma may be extraordinarily difficult.

Dr. Weaver, would you tell us about the follow-up on this case?

Dr. Weaver: I saw this chap a month ago. He has his prosthesis, he is back on the job, he is married and has youngsters and has invested in a new Ford car, and so far he's perfectly happy and we are keeping our fingers crossed. We don't know.

Dr. Helwig: Dr. Schloerb, there have been some studies on the etiology of osteogenic sarcoma and the possible role of radon, radium, plutonium and beryllium. Would you like to comment on any of those agents, and any other possible etiologic factors?

Dr. Schloerb: The occurrence of osteogenic sarcoma in individuals with known history of exposure to radioactive materials brings up an interesting question as to whether other people developing this tumor might possibly have been exposed to a radioactive agent at some time in their lives. We have checked several of these tumors for radioactivity, but the results were inconclusive.

Dr. Helwig: At Bethesda at the present time they're gathering data on cases of radium dial painters and others, including a group of people who had drunk large quantities of radioactive water, up around Pennsylvania someplace. There were a number of cases of osteogenic sarcoma in these people who drank this so-called "healing water." You are all familiar, of course, with the dial painters' sarcoma. Are there any other comments that anyone would like to make? Dr. Stoddard?

Dr. Stoddard: Postirradiational osteogenic sarcoma of the vertebrae following the treatment of testicular



tumors which has been reported recently<sup>2, 3</sup> would be in that same category.

Dr. Tice: It's interesting that occasionally patients with Paget's disease will develop osteogenic sarcoma. We had such a case presented at this conference some time ago.<sup>4</sup>

Dr. Helwig: Yes, it has been estimated that 28 per cent of cases of Paget's disease will end up as osteogenic sarcoma.<sup>5</sup> There are two types of osteogenic sarcomas that are usually seen in the older age group: those on the basis of Paget's disease, or chondroma or osteochondroma which becomes subsequently malignant. I have seen two cases of multiple cartilaginous exostoses undergo sarcomatous transformation. And that always brings up the question of prophylactic removal of an osteochondromatous exostosis for fear of its subsequent malignant transformation. How do you feel about that, Dr. Weaver?

Dr. Weaver: Most osteochondromas, particularly if they are unsightly or interfering with function, should be removed. This is especially true if they have a tendency to grow. Surgical removal is not a difficult procedure.

Dr. Helwig: Thank you, Doctor. I might say, in order to re-emphasize the difficulty of diagnosis, that I know of one case that was amputated for scurvy and I know of two cases that were amputated for ossifying myositis, which latter may be extremely difficult to differentiate roentgenologically from osteogenic sarcoma. This is a complex subject, and we have barely vaccinated the superficial surface of it today.

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#### FILM FOR RURAL AREAS

A new motion picture film, "A Citizen Participates," has been issued to show how members of a rural community can work together to get a physician. Produced by Centron Corporation and cleared by the A.M.A., the film should be a valuable public relations tool for county medical societies. It may be obtained on loan for showings to various organizations and business groups.

Complete information may be secured from Young America Films, Inc., 18 East 41st Street, New York 17, New York.

## BLUE SHIELD

### BLUE SHIELD GOALS

From time to time an organization should pause and take a look at its goals. Such introspection should be outside the framework of its day-to-day activity, its current problems, and temporary solutions. It should be based on the long view—a reappraisal of early goals, an evaluation of progress, and a recasting of future goals.

What were the early goals of Blue Shield, to what extent have they been achieved, and what should the future targets be?

Before considering these questions it is well to state clearly that the medical profession in Kansas has the full responsibility for the fate of Blue Shield. Blue Shield goals must be set by the doctors, and these goals cannot be realized without the acceptance and co-operation of the vast majority of the profession.

*Original Goals.* In Kansas, the first goal of those who believed in the Blue Shield idea was to bring the plan into being. Here was a new and still highly experimental idea—actually a controversial idea to many physicians. Looking back, one can now better appreciate the foresight, the imagination, and the vigorous courage it took to tackle a plan as involved as Blue Shield actually was. When we consider how easy it is to wash our hands of a complex problem which involves widespread group action, we must be grateful to the leadership in the Kansas Medical Society, Dr. Barrett A. Nelson and others who devoted so much energy and time to the formation of Kansas Physicians' Service.

A good statement of the problems and goals of Blue Shield is contained in a report Doctor Nelson made in the *JOURNAL* in May 1944. As chairman of the Medical Economics Committee, he had just returned from a Chicago meeting of the Medical Service Plan Council, a group of physician-sponsored plans then in operation. Doctor Nelson reported: "The conviction was obtained that this rapidly spreading movement truly fills a need which has long existed in the economics of medical practice, making it possible for patients to budget against the financial strain of serious illness.

"The successful plans are remarkably similar in character. It definitely has been found that the public is not ready for a plan for over-all and complete coverage. The costs are necessarily more than the purchaser of a contract is willing to pay, and there is, as yet, insufficient actuarial basis for complete knowledge of proper costs.

"The tentative plan for Kansas would . . . limit

coverage, for the present, to surgery, orthopedics and obstetrics.

"The proposed contract would present a fee schedule furnishing complete payment for the prescribed services for individuals with an annual income below \$1,800 (or a family income of \$2,400), while those with higher incomes would be expected to pay the difference between the fee schedule and the usual fee for their income levels."

A key to the goal thinking of the planners of Blue Shield lies in the phrase "enabling people to budget the cost of serious illness."

Another notable point is that early goals were properly and necessarily restricted because of lack of actuarial data and financial stability.

*Evaluation of Progress.* Has Blue Shield achieved its early goals?

Two of the goals were to gain actuarial experience and achieve financial stability. Both have been accomplished.

The original idea of a limited surgical-obstetrical plan has been expanded considerably. Even before Blue Shield started business it added (in hospital) medical benefits. These medical benefits have been improved on two occasions since the first contract.

Since the first contract the following other expansions of coverage have been adopted:

1. X-ray therapy for cancer
2. Isotope therapy for thyrotoxicosis and cancer of the thyroid
3. Removal of \$175 maximum for any one illness
4. Removal of \$300 maximum for any one year
5. Development of a \$5,000 extended benefits rider for polio and eight other diseases. (This is a pioneer step in the direction of full coverage for catastrophic illness.)

*Enrollment.* In the meantime, Blue Shield has had a gratifying growth in membership, the latest enrollment total being nearly 320,000 members. Kansas Blue Shield today is in a position of strength from which it can now move forward into new concepts of medical economics.

*New Goals.* What new goals should now be developed for Blue Shield?

Of course, there is the ongoing goal to enroll as many people as possible. But this goal of enrollment can best be achieved through continuous improvement in our program.

Here are some long range possibilities to think about.

1. Extension of coverage for catastrophic illness to include other conditions such as cancer, rheumatic fever, and multiple sclerosis.
2. Higher fee schedules with deductible provisions in order to give maximum protection to the middle income group.

3. Open fee schedule contracts for executive personnel in large employee groups.

4. Lower rate, lower fee schedule contract for low income group which we are not now enrolling.

These broadly defined ideas would need a great amount of study and clarification before they might be adopted. It should be repeated here that the medical profession controls the fate of Blue Shield. Until there is acceptance by doctors, Blue Shield cannot move forward unto new goals.

The thoughts of individual physicians are solicited at this time. You are urged to take time out and write your ideas to the JOURNAL. They will be passed along to the Blue Shield board for consideration.

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#### NEW CHAIRMAN FOR ADVISORY COMMITTEE

Dr. Byron J. Ashley, Topeka, has been named chairman of the Kansas Volunteer Advisory Committee to succeed Dr. Lucien R. Pyle, Topeka, who resigned recently when he became president of the Kansas Medical Society.

Other members of the committee are Dr. Thomas R. Hood and Dr. H. H. Cook, the latter representing dentistry. Assisting in an advisory capacity are Dr. A. R. Bower, for veterinarians, and Miss Irma Law, for nurses.

"This is an advisory committee," Doctor Ashley said, "and as its name implies, it has no official powers of any kind. Our primary duty is to preserve essential civilian health services, so where the induction of a physician would seriously affect a community, we recommend a delay in his orders to provide time for the people to obtain a replacement.

"We also are charged with aiding Selective Service in providing certain health personnel for the armed forces. Therefore, we are required to maintain an up-to-date list of all available doctors in this state.

"Our duties are two-fold. We represent a co-ordinating mechanism between Selective Service and the local community, but our principal concern is to protect the people of this state from serious shortages in services that are provided by physicians, dentists or veterinary physicians."

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#### HEART FELLOWSHIPS AND GRANTS AVAILABLE

American Heart Association fellowships for the 1954-1955 year are now being planned, and applications may be submitted as late as September 15, 1953. Applications for research grants-in-aid must be submitted before December 1, 1953. Information and application blanks may be secured from the association, 44 East 23rd Street, New York 10, New York.



# The Diagnosis of Polyarteritis Nodosa: A Review of the Literature and the Presentation of Two Cases\*

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Polyarteritis nodosa is a disease of many names possessing more than 15 synonyms.<sup>1</sup> The most frequently used are: periarteritis nodosa, polyarteritis, panarteritis, necrotizing arteritis, primary arteritis, and essential polyarteritis.<sup>2</sup>

Polyarteritis nodosa was first described, microscopically, by Rokitsky in 1853.<sup>3</sup> The first complete description of the disease was made by Kussmaul and Maier in 1866.<sup>4</sup> However, it was Meyer that presented the symptom triad for polyarteritis nodosa (chlorotic marasmus—polyneuritis, polymyositis, and gastrointestinal symptoms).<sup>5</sup> This triad is still descriptive of the most common symptoms encountered today.

## ETIOLOGY

The etiology of polyarteritis nodosa has been attributed to many diseases or substances. The most commonly cited "etiological agents" are asthma, rheumatic fever, syphilis, hypertension, tuberculosis, a filterable virus, unknown specific infections, streptococcal infections, stress, and various sensitivity reactions.<sup>3, 6, 7, 8, 9</sup> Currently sensitivity reactions are believed to be the most likely causes.

Some of the substances that have been incriminated are sulfonamides, desoxycorticosterone, anterior pituitary substances, iodine, penicillin, activated ergosterol, histamine, propylthiouracil, Dilantin, and foreign sera.<sup>2, 3, 6, 7, 8, 10, 11, 12</sup>

It is interesting to note that polyarteritis is rarely associated with common forms of allergy in children.<sup>13</sup>

## PATHOLOGY

Polyarteritis nodosa is commonly included in the group of so-called diffuse collagen diseases.<sup>16</sup> Some investigators consider it to be pathologically related to Henoch's and Schoenlein's purpuras, rheumatic fever, rheumatoid arthritis, thromboangiitis obliterans, serum sickness, and possibly to Loeffler's and Libman-Sacks' syndromes.<sup>3, 17</sup> One authority even relates collagen diseases, including polyarteritis, to old age.<sup>18</sup>

Essentially a disease of the medium and small

arteries, it affects the media initially and the intima and adventitia later.

Arkin has classified the pathological findings into four stages and has attempted to correlate these with four clinical stages.<sup>15</sup>

1. Beginning. Edema and fibrinous exudate occur within the media along with neutrophil and eosinophil infiltration producing narrowing of the vessel lumen. The clinical finding in this stage, if any, is fever.

2. Acute Inflammatory. In this stage the media, adventitia, and perivascular tissues are invaded by neutrophils, eosinophils, lymphocytes, and plasma cells; there is intimal and subendothelial connective tissue proliferation. Infarcts and thrombi are common. Clinically one encounters fever, chills, leukocytosis, eosinophilia, anemia, and symptoms of organ involvement. In this stage, the most common causes of death are cardiac or renal insufficiency.

3. Granulation. Fibroblastic infiltration of the involved layers and intimal proliferation occur. Aneurysms and vessel rupture are common. The clinical picture presents fever, emaciation, decreasing leukocyte count, anemia, and symptoms of organ involvement. Death from hemorrhage may occur.

4. Healed. The microscopic examination reveals scarred vessels with narrowed lumina and irregular, thickened walls. The entire organ involved may be shrunken and scarred. The patient may display a normal temperature and leukocyte count with tachycardia and symptoms of organ insufficiency.

The incidence of involvement of the various organs is: kidneys, 80 per cent; heart, 70 per cent; liver, 65 per cent; gastrointestinal tract, 50 per cent; mesenteric arteries, 30 per cent; pancreas, 25 per cent; peripheral nervous system, 20 per cent; and central nervous system, 8 per cent.<sup>28</sup> Several other observers present findings similar to these.<sup>23, 35, 39, 51</sup>

## INCIDENCE

There have been about 500 cases of polyarteritis reported in the English literature.<sup>19</sup> The ages of the patients ranged from 10 days to 89 years.<sup>19</sup> The highest incidence is between the ages of 20 and 40 years.<sup>16</sup> It was found that only 52 of 484 patients were under 15 years.<sup>19</sup>

Of the above cited 484 cases, the male to female

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\* Thesis written while the author was a senior student. Dr. Ray is now interning at St. Joseph Hospital, Kansas City, Missouri.

ratio in adults is 2.3 to 1 and in children it is 1 to 1.08.<sup>19</sup>

#### CASE HISTORIES

Within the past year there were two cases of polyarteritis admitted to the University of Kansas Medical Center. The case histories follow.

Case 1 (ECV). This 47-year-old white male was admitted to the KUMC on January 2, 1952, with a chief complaint of pain, numbness, and swelling of feet and paralysis of right foot.

The patient's symptoms began in November, 1951, with a severe, dull, aching pain along the medial surface of the left leg recurring at about weekly intervals. During December the sole of the left foot became painful and the right lower extremity became affected with a severe burning pain in the popliteal area, swelling, and foot drop. The patient had also noted paresthesias of the left forearm and the palmar surfaces of the first and second fingers.

The patient had had an esophagogastroplasty to correct a congenitally short esophagus and hiatal hernia (1950) and a stomach operation at the age of five.

The important positive findings of the admission physical examination were limited to the lower extremities. There were a moderate amount of calf muscle atrophy bilaterally, swollen feet, and right foot drop. Ankle jerks were absent; there was loss of position sense of the right foot, and decreased pain and temperature sensations of the right sole.

The admission laboratory findings were as follows: urinalysis normal; RBC 4,800,000; Hb. 89 per cent; WBC 17,000 with polys 76 per cent, lymphs 21 per cent, and monos 3 per cent. The routine and special blood chemistry was negative except for a non-protein nitrogen of 42 mg. per cent. The agglutinations, stool examinations, spinal fluid, and liver function tests were negative. The EKG showed a sinus tachycardia; x-rays and EEG were non-contributory.

During the course of hospitalization, the urine remained essentially negative except for varying amounts of proteinuria. The WBC varied from 17,000 with 76 per cent polys to 39,400 with 83 per cent polys. Total circulating eosinophils dropped from 494/cu. mm. to as low as 38/cu. mm., possibly in response to treatment. Renal function tests indicated at least moderate renal insufficiency.

The patient ran a low grade febrile course with moderate tachycardia; blood pressure varied from 150/90 to 200/110. Neurological findings were consistent with a clinical diagnosis of polyarteritis nodosa. Although the first muscle biopsy was negative, the second, a few days later, showed changes characteristic of polyarteritis.

The patient received no benefit from liver extract and thiamin chloride. ACTH produced immediate

relief of pain and some decrease of the paresthesias although there was no improvement of the edema and weakness. When ACTH was discontinued for 10 days, the symptoms returned.

The patient was dismissed February 9, 1952, on ACTH, potassium chloride, and Vitamin C.

Case 2 (PR). This 40-year-old white male was first seen for this illness by his local physician on November 14, 1951, complaining of soreness and swelling of the legs.

A painful and tender swelling of the anterior lower right thigh first appeared about the middle of November and lasted several days, leaving slowly. The overlying skin became slightly thickened. About a week later the dorsum and lateral aspect of the right foot became swollen, red and painful. There was no joint involvement although the patient had had migratory joint pain and swelling and severe burning of the feet and fingers since an attack of pericarditis in June, 1951.

Physical examination (November 14) showed the right foot to be swollen, red, edematous (non-pitting), and sensitive to light touch; there was some edema of the right leg and numbness of third and fifth toes. There was slight swelling of the dorsum of the left foot. Knee jerks were sluggish.

The urine showed proteinuria and slight pyuria and hematuria. The sedimentation rate was increased.

The patient returned to his physician after several days in bed. He still had severe leg pain, worse at night. The inflammation of the right leg and foot had subsided although there was tenderness and hypesthesia over the dorsum of the foot. The urine was about the same. A biopsy of the leg muscle was negative.

Examination upon admission to KUMC (December 12, 1951) revealed marked hyperesthesia, in response to light stroking, of the right lower leg and dorsum of the foot and, to a lesser extent, of the left leg. One axillary and a few cervical glands were found to be slightly enlarged.

Extensive laboratory work was done with few abnormalities being found. The urine showed slight proteinuria, pyuria, and cylindruria for four times; blood was positive once. The glucose tolerance exhibited the following: fasting 56 mg. per cent; 1 hour, 195 mg. per cent; 2 hours, 195 mg. per cent; 3 hours, 110 mg. per cent; 4 hours, 68 mg. per cent; and 5 hours, 63 mg. per cent. The first, second, and third hour urine specimens showed positive sugars. The sedimentation rates were slightly to moderately elevated. Routine and special blood chemistry tests, renal function tests, spinal fluid examinations, skin tests, hepatic function tests, and other examinations were all within normal limits. The chest x-ray showed emphysema and increased hilar shadows of an infiltrative nature; other x-rays were non-contributory.



Biopsies of pectoral muscle and axillary lymph node were negative.

The patient's short hospital course was uneventful; the blood pressure never exceeded 160/90 (admission), and the temperature was always under 99° F.

The patient was dismissed (December 19, 1951) with the most likely diagnosis being polyarteritis nodosa. His local physician was advised to use ACTH or cortisone.

#### CLINICAL SIGNS AND SYMPTOMS

The signs, symptoms, laboratory, and x-ray findings most frequently encountered in the cases reported by six investigators are listed in Chart I.

To list completely all of the signs and symptoms found in patients having polyarteritis would be futile. Almost every sign or symptom has been found at some time in patients afflicted, yet few are encountered consistently enough in all cases to be considered of diagnostic value.

The pathology of polyarteritis shows that it is a disease of the vascular system resulting in occlusion and/or hemorrhage, the occlusive phenomena being most prevalent. Therefore, the findings are those produced by ischemia of one or more organs or systems.

The onset may be rapid or insidious, progressing over days or months. About 18 per cent to 25 per cent of the patients have a history of allergic manifestations.<sup>24</sup>

The presenting symptom will most likely be that of pain, particularly abdominal pain or discomfort.<sup>25</sup> In one series of 30 patients, gastrointestinal symptoms occurred in 75 per cent.<sup>26</sup> About half of the patients complaining of pain had it in the epigastrium or right upper quadrant.<sup>26, 27</sup> Many laparotomies have been performed because of abdominal discomfort and vomiting frequently accompanying it.<sup>28</sup>

The involvement of any of the intraabdominal organs as well as the supporting structures and the abdominal wall has resulted in findings resembling peptic ulcer, appendicitis, gastrointestinal perforation, peritonitis, pancreatitis, ruptured spleen, and others. If the abdominal discomfort is of ischemic origin, morphine will not provide adequate relief.<sup>27</sup> This may serve to assist in differentiating polyarteritis from most inflammatory processes.

Other abdominal and gastrointestinal signs and symptoms that may be present are nausea, vomiting, constipation, diarrhea, distention, melena, jaundice, splenomegaly, and hepatomegaly, the latter usually resulting from congestive heart failure.<sup>3, 7, 19, 27</sup> A detailed list of abdominal symptoms does not advance the diagnosis greatly.

Renal findings are commonly a part of the picture; renal and genitourinary involvement occurs in practically every case.<sup>21</sup> The association of renal symptoms along with polyneuritis is suggestive of polyarteritis.<sup>29</sup>

CHART I

SIGNS, SYMPTOMS, AND LABORATORY FINDINGS  
ENCOUNTERED IN 10 PER CENT OR MORE OF  
PATIENTS HAVING POLYARTERITIS NODOSA

Source (Ref.)	4	20	21	22	14	23	257
Total	7	30	6	17	20	177	
Sign, Symptom							Total
Fever	7	21	6	12	9	143	198
Gastrointestinal		23(a)					23
pain <sup>1</sup>			5	11	3	99	118
nausea-vomiting			4	6		57	67
jaund.-hep'meg.			3	11		21	35
Renal							
albuminuria	5		4	14	6	115	144
hematuria	4	17	4		1	85	111
azotemia	4	15			2	23	44
Nervous System		14(b)			2(c)	46(d)	62
coma			3			37	40
sensorial <sup>2</sup>					16	60	76
eye signs			1(e)	1(f)	1(g)	41	44
headache			3		4	46	53
neuritis, periph.	5				17	87	109
Muscular							
atrophy					10	35	45
weakness	5		6		17(h)	80	108
Cardiovascular		17(i)			8(j)		25
HBP		20(k)	3	14	11	94	142
dyspnea			4	8		71	83
cyanosis						35	35
tachycardia			5	16	13	85	129
edema <sup>3</sup>	4			11		87	102
Pulmonary							
cough				3		64	67
pain						30	30
Skin							
nodules		4	3	2	2	41	52
other lesions <sup>4</sup>		6		2		34	42
Joints							
arthritis						60	60
Blood Findings							
anemia		19	6		9	85	119
leukocytosis		24	6	13	14	129	186
eosinophilia	4	5		1	5	57	72
sed. rate		13		17			30
Weight Loss	4	5		9	14	78	110
Allergic History						37	37
Lymphadenopathy			2	2		19	23

Key to Notes in CHART I:

1. Including abdominal pain.
2. Paresthesias, anesthetics, etc. (?)
3. Edema, regardless to etiology (cardiac, renal, inflammatory, etc.).
4. Purpuras, petechiae, rash, etc.
- a. No particular gastrointestinal symptom specified.
- b. Hallucinations, disorientation, coma, etc.
- c. Focal brain signs.
- d. Central nervous system involvement.
- e. Blindness.
- f. Hemianopsia.
- g. Papilledema.
- h. Generalized and local.
- i. "Cardiac symptoms."
- j. Hypertrophy, arrhythmias, murmurs.
- k. Blood pressure exceeds 150/90.

Usually edema and slight or profuse hematuria direct attention to the renal system.<sup>29, 30</sup>

Nocturia, cylindruria, high blood pressure, and edema may be present, simulating acute nephritis.<sup>21</sup> Renal colic may also be present.

Microscopic urinalysis often shows the unusual combination of erythrocytes, erythrocyte, fatty and blood casts.<sup>32</sup> Functional tests often show evidence of increasing damage.<sup>29</sup>

When the heart is involved, precordial pain, angina, palpitation, dyspnea, and cough are frequently present.<sup>7</sup> However, Boyd believes that angina is uncommon compared to the frequency of coronary artery involvement (60 per cent).<sup>29</sup> Tachycardia, hypertrophy, systolic murmurs, and peripheral edema are commonly encountered.<sup>7</sup> Tachycardia, present in 65

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AUTHORS	No. of Patients	Chronic, Resistant to Other Therapy	TYPES OF ULCERS				RELIEF OF SYMPTOMS (Chiefly Pain)				Surgery or Complications <sup>1</sup>	Side Effects Requiring Discontinuance of Drug <sup>2</sup>	EVIDENCE OF HEALING			
			Duodenal	Jejunal	Stomal	Gastric	Good	Fair	Poor	No Report			Complete	Moderate	None	No Report
Grimson, Lyons, Reeves	100	100	93	7			80	11	4		5		47		19	29
Friedman	15	15	14			1	5		4	6 <sup>1</sup>			2			13
Bechgaard, Huelzen, Bang, Gruelund, Tobiasen	26	26	21			5	16	4	6				8	6	12	
McHardy, Browne, Edwards, Marek, Ward	162		162				136	12	11		3	1	14	9	7	129
Segal, Friedman, Watson	34	34	34 <sup>4</sup>				14	13			7	2	5		8	14
Brown, Collins	117	99	117				97	7	8		5	8	55	9	8	40
Asher	77		65		7	5	52	9	16			16		9	21	47
Rodriguez de la Vega, Reyes Diaz	5	4	5				4		1					3	2	
Winkelslein	116	116	102	8		6	102		14				53		18	45
Hall, Hornisher, Weeks	18	18	18				11		1	6 <sup>5</sup>			18			
Maier, Meili	38	38	24			14 <sup>6</sup>	27	7	4 <sup>1</sup>				10	2	5	21
Meyer, Jarman	25	18	25				21		4							25
Poth, Fromm	37	37	37				33	3	1				33	3	1	
Plummer, Burke, Williams	41	41	41				36		5				38		3	
McDonough, O'Neil	104	100	104				63	10	31			11	4		11	89
Broders	60	60	58		1	1	35	19	6				10	1	49 <sup>8</sup>	
Legerlon, Texter, Ruffin	11		11				11									11
Holoubek, Holoubek, Langford	76	69	76				35	27	10		4	10	26		10	36
Ogborn	42		39	2		1	42 <sup>9</sup>									42
Shaiken	48	48	48				33	10	3		2		33	10	3	
Johnston	145	145	145				143		2			2	143		2	
Rossett, Knox, Stephenson	146		141			5	146					4 <sup>10</sup>	53			93
TOTALS	1443	968	1380	17	8	38	1142	132	131	12	26	54	552	52	179	634
PERCENTAGES			67.8	95.6	1.2	0.6	2.6	81.3	9.4	9.3		3.7	70.5	6.6	22.9	

1. Not included in tabulations.

2. Included in "Relief of Symptoms" as "Poor" and in "Evidence of Healing" as "None."

3. Four had no symptoms when Banthine therapy was begun.

4. Of which seven were penetrative lesions and five partially obstructive.

5. No symptoms were present in four.

6. Two with symptoms only; no demonstrable ulcer.

7. Three were psychopathic patients and one had a ventricular ulcer of the lesser curvature.

8. Roentgen findings after treatment period of two weeks; forty-seven had duodenal deformity.

9. All returned to work within a week.

10. In these four, after relief of symptoms, Banthine was discontinued because of urinary retention.

During the past three years, more than 250 references to Banthine therapy in peptic ulcer and other parasympathotonic conditions have appeared in medical literature. Of these reports, 22 have presented specific facts and figures on the results of treatment in a total of 1,443 peptic ulcer patients, 67.8 per cent of whom were reported as chronic or resistant to other therapy. These results are tabulated above and show:

"Good" relief of symptoms was obtained in 81.3 per cent of the 1,405 patients on whom reports were available.

"Complete" evidence of healing was obtained in 70.5 per cent of the 783 patients on whom reports were available.

In all but 9.3 per cent, relief of pain was "good" or "fair." In all but 22.9 per cent, evidence of healing was "complete" or "moderate."

During treatment, 26 patients required surgery or developed complications other than ulcer which required discontinuance of the drug before results could be evaluated.

Of the remaining 1,417 patients, only 3.7 per cent experienced side effects sufficiently annoying to require discontinuance of the drug.



\*Volume containing complete references, with abstracts of 39 additional reports, will be furnished on request by

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per cent of the patients, is out of proportion to the temperature and has been considered a diagnostic point.<sup>29</sup>

Hypertension is a common occurrence; its sudden appearance is particularly suggestive of polyarteritis.<sup>29</sup> There may be some etiological relationship between hypertension and polyarteritis, the hypertension being the cause of the polyarteritis.<sup>33</sup>

Some authors call attention to the fact that hydropericardium, alone or as a part of a polyserositis, is common.<sup>29</sup>

One of the most common manifestations of polyarteritis is the presence of peripheral nerve involvement. The most frequent symptoms are pain, weakness, nerve trunk tenderness, paresthesias, anesthetics, and decreased or absent tendon reflexes.<sup>34</sup> The peripheral neuritis is usually in the lower extremities but can be anywhere and may have root distribution.<sup>8</sup> It is usually remittent and asymmetrical.<sup>8</sup>

The motor nerves as well as sensory nerves can be involved, and this may be the reason that muscular weakness is out of proportion to neurological signs.<sup>34</sup>

Muscles are not affected unless the arteries show local changes.<sup>34</sup> This apparently accounts for frequent atrophy and tenderness, aggravated by use and improved with rest.<sup>35</sup> It is interesting to note that a patient who had had a splanchnectomy for hypertension experienced no more pain except when his blood pressure rose to near its formerly hypertensive levels.<sup>36</sup>

The presence or absence of neuritis appears to be unrelated to age, sex, or clinical course of the disease.<sup>37</sup>

Central nervous system symptoms occur frequently. The most common manifestations are convulsions, generalized or Jacksonian, appearing in no less than 15 per cent.<sup>39</sup> Convulsions appear more frequently in younger groups.<sup>38</sup> Involvement of cranial nerves has been recorded several times.<sup>8</sup>

Joint symptoms are not at all rare.<sup>34</sup> Fisher and Gilmore affirm that joint manifestations ranging from arthralgias to migratory arthritis are frequent.<sup>3</sup> However, Lowman states that synovitis and arthritis are uncommon because of collateral circulation.<sup>25</sup> In any event, the joint pain usually fades into the background as the syndrome progresses.<sup>34</sup>

Skin lesions, of one form or another, are frequently encountered in polyarteritis; they are important because of biopsy possibilities.<sup>40</sup> Besides the lesions there is also an extremely common pallor associated with emaciation, the chlorotic marasmus of Myer.<sup>40</sup>

Apparently there are two forms of skin lesions: the cutaneous form which is rare, chronic, and has a favorable outcome, and the subcutaneous form (periarteritis subcutis) which is more common and equally chronic and favorable.<sup>1</sup>

The majority of the skin (cutaneous) lesions are of the hypersensitivity type (i.e., urticarial, purpurial, or erythematous) although papular rashes, vesiculation, and bullous eruptions may be seen.<sup>8</sup> The pure form of cutaneous polyarteritis is characterized by "livido racemosa" and formation of dermal or subcutaneous nodules.<sup>41</sup>

The description of livido racemosa supplied by Wertheim is: ". . . livid, arborescent branched skin markings which fade into the surrounding skin without sharp demarcation. Usually thickened, elevated blue-red main trunks and less intensely colored lateral branches of first, second and third order fading into normal skin is evident."<sup>41</sup> This must be differentiated from livido reticularis and livido reticularis peristans.<sup>41</sup> (According to Dorland, livido racemosa and livido reticularis are synonymous.<sup>42</sup>)

Skin lesions may be either single or multiple and are usually painful to pressure.<sup>43</sup> The overlying skin may be normal, appear translucent, edematous, or display red or violet colors.<sup>40</sup> They may appear in crops, usually persisting 48 to 72 hours, accompanied by profound weakness or temperature rise.<sup>40, 44</sup> Nodules may appear along superficial arteries and may pulsate.<sup>9</sup> In a survey of 44 pediatric patients, nodules appeared in only 4.5 per cent, other lesions in 61 per cent.<sup>45</sup>

The order of involvement of the skin is: forearm, chest, legs, abdomen, thighs, face, ankles, back, digits, soles, scalp, scrotum, and tongue.<sup>40</sup>

The lungs appear to enjoy a remarkable exemption from polyarteritis.<sup>1</sup> The most frequently encountered symptom is that of chronic cough.<sup>46</sup> Pain may be present if the pleura is involved, and hemoptysis may occur if tracheal ulceration or arterial rupture occurs.<sup>47</sup>

The x-ray picture is not typical. It may be one of pneumonitis, miliary tuberculosis, infarction, emphysema, asthma, bronchitis, or bronchopneumonia.<sup>7, 9, 47</sup> Infiltration from the hilar areas is as "typical" as any.<sup>7</sup> The diagnosis is suggested if one sees, on serial x-rays, the regression of earlier lesions and the progression of others, with or without the development of new ones.<sup>47</sup>

Laboratory findings in polyarteritis are limited almost entirely to the blood count. As a rule hypochromic anemia, mild compared to the pallor of the skin, is present.<sup>1</sup> It is unusual to find an erythrocyte count of less than 2,000,000 or a hemoglobin of less than 40 per cent. Leukocytosis is the rule with counts ranging from 10,000 to 60,000 with the average being 25,000 and, usually, a shift to the left.<sup>21</sup> Eosinophilia, cited as being characteristic, is not often present. Of 300 cases reviewed, 18 per cent had eosinophils; of those, 94 per cent had bronchial asthma.<sup>24</sup> The sedimentation rate is usually decidedly increased.<sup>1</sup>

Lepow et al.<sup>48</sup> noticed a precipitation phenomenon



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in six of their patients, three of whom had polyarteritis proved by biopsy or autopsy and one each of clinically diagnosed cirrhosis, subacute bacterial endocarditis, and septicemia. They noticed the formation of a precipitate in the blood serum after it had stood 24 hours at 4°C; this was not due to "cold fractions" or "cryoglobulins." The precipitate formed when there was a reversal in the albumen:globulin ratio, an azotemia, and when the cephalin flocculation test was strongly positive. It is interesting to note that Erich reports that there is a rise of gamma globulin in polyarteritis.<sup>49</sup>

#### TREATMENT

Treatment will not be discussed here other than to say that it has been notably unsuccessful and that cortisone and/or ACTH holds the best promise at present.

#### PROGNOSIS

The prognosis of polyarteritis is poor. However, some authorities believe that it is not fatal as often as previously reported.<sup>19</sup> For a disease as widespread and as variable as this one, it is quite conceivable that misdiagnosed or subclinical cases could often occur.

Perhaps the best prognosis of the disease could be determined from the figures compiled by Boyd in a review of 150 cases.<sup>5</sup> Of these, he found the duration of illness to range from 1 week (4 patients) to over 4 years (3 patients) with the majority (90 patients) in the one- to four-month range; seven apparently recovered.

The causes of death in 128 patients were: nephritis, 28; cardiac failure, 31; perirenal hemorrhage, 15; bronchopneumonia, 11; peritonitis, 9; hepatic hemorrhage, 6; cerebral hemorrhage, 5; and 10 other causes, 16.<sup>1</sup>

#### DISCUSSION

Polyarteritis nodosa is a relatively rare disease; however, it appears that there may be many subclinical or misdiagnosed cases that obviously have not been reported.

Positive antemortem diagnosis can be made only by muscle biopsy. Even by biopsy of a large piece of muscle from the tender areas, only about 25 per cent of the tests are positive.<sup>14</sup> It appears that pectoral muscles produce the highest percentage of positives.<sup>4</sup>

The onset of the disease is varied; the provisional diagnoses in 50 unselected cases ranged from generalized infection (27 patients) to Wilson's disease (1 patient).<sup>50</sup> The usual onset resembles a non-localized infectious disease.<sup>1</sup>

There is a certain fundamental picture that should cause suspicion of polyarteritis. This is a picture of fever, malaise, asthenia, and weight loss in the absence of known infections, parasitic infections, neoplastic,

metabolic, or congenital diseases. Multiple diagnoses are common.

There are signs and symptoms that often appear at some time in the course of the disease that should serve to make one suspicious of polyarteritis. Often there are signs or history of recent allergic reactions; this may become of major importance if some of the following manifestations are encountered:

1. Skin manifestations, particularly of the sensitivity type if accompanying systemic disease.
2. Asymmetrical neuritis, with paresthesias and anesthetics; its importance increases if there is also asymmetrical myalgia, paralysis, or muscle weakness.
3. Abdominal pain, particularly if accompanied by gastrointestinal disturbances and not characteristic of more common intraabdominal pathology.
4. Renal signs characteristic of glomerulonephritis; albuminuria and hematuria are often present.
5. Hypertension is a frequent finding, becoming more important if it appears suddenly.
6. Tachycardia out of proportion to temperature, the latter almost always elevated to a slight degree.
7. Usually a hypochromic anemia and a neutrophilic leukocytosis is present; eosinophilia is present if asthma is also present.

#### SUMMARY

1. Two new cases of polyarteritis are presented; one was confirmed by biopsy and the other presented the "typical" clinical picture.
2. A brief review of recent literature is reported with emphasis upon the antemortem diagnosis of polyarteritis nodosa.
3. Some of the clinical signs and symptoms most commonly encountered in polyarteritis are stressed.
4. The only certain means of diagnosing polyarteritis, antemortem, is by muscle biopsy; accuracy is approximately 25 per cent.

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## BOOK REVIEWS

*Surgery of the Pancreas.* By Richard B. Cattell and Kenneth W. Warren. Published by W. B. Saunders Company, Philadelphia. 374 pages, 100 figures. Price \$10.

The authors state that this book is based on experience with more than 1,000 patients with surgical diseases of the pancreas treated at the Lahey Clinic. In addition to a study of the material in the clinic, an adequate review of the literature has been made and the references are appended at the end of each chapter.

The first chapter is devoted to the anatomy and physiology of the pancreas. Succeeding chapters discuss congenital malformations of the pancreas, acute pancreatitis, chronic relapsing pancreatitis, pancreatic cysts, pancreatic injuries, islet cell adenomas and hyperinsulinism, carcinoma of the pancreas and periampullary area, and total pancreatectomy.

In the chapter on acute pancreatitis there is a short historical note followed by a thorough review of the etiology, pathology, symptomatology, methods of examination, and medical and surgical treatment. That difficult subject, chronic relapsing pancreatitis, is very well presented. The modern treatment of pancreatic cysts, the medical and surgical aspects of hyperinsulinism, and the management of pancreatic injuries, are all ably presented.


The critical study of carcinoma of the pancreas and periampullary area, with the authors' results of treatment, is to be praised. Five of 32 patients (16 per cent) who had pancreatoduodenectomies for carcinoma of the head of the pancreas, ampulla of Vater, duodenum and distal end of the common duct, have survived from 5 to 9 years.

The text is adequately illustrated with good drawings, roentgenograms, and charts.

This book is not a monograph for surgeons only but would be of great value to any physician who is called upon to diagnose and treat diseases of the pancreas.—T. G. O.

*An Atlas of Surgical Exposures of the Extremities.* By Sam W. Banks and Harold Laufman. Published by W. B. Saunders Company, Philadelphia. 391 pages, 552 illustrations in 179 plates. Price \$15.

This is a comprehensive atlas of surgical incisions of the extremities giving in detail the surgical exposures and major structures encountered in any major operation. This volume will be extremely valuable to the surgeon who operates on the extremities



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Supplied in 0.25% solution (plain), bottles of 1 oz., 4 oz. and 16 oz.; 0.25% solution (aromatic), bottles of 1 oz. and 16 oz.; 0.5% solution, bottles of 1 oz.; 1% solution, bottles of 1 oz., 4 oz. and 16 oz.; 0.125 (1/8)% solution, bottles of 1/2 oz.; 0.5% water soluble jelly, in 5/8 oz. tubes.

I. Von Alyeo, O. E., and Donnelly, Allen: Arch. Otolaryng., 49:234, Feb., 1949.

A few drops of Neo-Synephrine 0.25% in each nostril will promptly check mucosal engorgement and hypersecretion, promoting greater breathing comfort over a period of several hours.

The resultant relief to the hay fever sufferer is decidedly gratifying. Prolonged action of Neo-Synephrine makes fewer applications necessary, consequently longer periods of rest and sleep are possible.

Neo-Synephrine does not lose its effectiveness on repeated application and may, therefore, be relied upon to give relief throughout the hay fever season.

Neo-Synephrine is practically free from sting and compensatory congestion; does not appreciably inhibit ciliary activity.

Neo-Synephrine has been found relatively free from systemic side effects such as nervous excitation, cardiac reaction or insomnia even when tested on hypertensive, cardiac and hyperthyroid patients.<sup>1</sup>

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since some of the simplest, as well as the more complicated incisions, have been included. Any surgeon who has a great deal of traumatic or elective extremity surgery will find this a refreshing and interesting pictorial representation of regional anatomy.—C. H.

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*Living with Cancer.* By Edna Kaebele. Published by Doubleday and Company, Inc., Garden City, New York. 160 pages. Price \$2.00.

The author, alive six years after being told by two physicians that she had a malignancy, tells the story of her thoughts and experiences during that time. Although the site of the neoplasm is not divulged, the reader can presume only that its origin may be in the uterine cervix, because of the treatment received. At the same time there is no indication that biopsy confirmation has been carried out in this patient; however, the course of the patient makes it entirely possible that a malignancy does exist in fact.

This story in essence illustrates the devastating effect of "fear" on physical and mental stability, and how the overcoming of that fear, through faith in herself as well as her religion, can renourish a starving body back to reasonably good health. The book is fairly well written and is short enough that the repeated effects of introspection and pity soon turn to an enthusiastic attempt at guidance of others.—S. R. F.

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*Essentials of Infant Feeding for Physicians.* By Herman Frederic Meyer. Published by Charles C Thomas, Springfield, Illinois. 252 pages, 10 illustrations. Price \$7.75.

The author amply illustrates the seeming complexity of feeding normal babies by using as a frontispiece a photograph of 107 different commercial preparations available for making infants' formulas. He further emphasizes the physician's need for a concise and practically applicable source of information on the principles of infant feeding by stating that, "Sixty to 80 per cent of the average pediatric practice consists of the routine feeding of normal babies." Whether the book adequately fulfills the physician's need in this field is open to question.

The index is excellent, befitting a book designed for rapid reference. The bibliography is extensive. Unfortunately, references are listed alphabetically instead of by subject, which would seem the more useful arrangement in a reference book. The section on description and evaluation of proprietary formula preparations is remarkably complete and constitutes useful reference material. Equally useful material, a

classification and evaluation of proprietary vitamin preparations, is completely neglected.

Some of the text, such as the pages berating vitamin advertising, does not seem necessary in a book designed for "brevity and compactness." At the end of the text there is a 37-page appendix consisting of weight and measure equivalents, nutritional requirements and their food sources, and other material, some of it not directly pertinent to infant feeding (e.g. parenteral fluid administration, newborn nursery regulations). The book is written in a controversial style which at times does not clearly convey the author's meaning. Some controversial problems, such as the feeding of infants with diarrhea, are treated with perhaps an unjustified dogmatism. The author is best when drawing upon his own pediatric experience to advise about techniques of infant feeding and parent education. Feeding fads are sensibly discussed.

Though containing much useful reference material, the book is probably better suited as a resumé and overall introduction to the problems of infant feeding than as the handy pocket reference that was intended.—C. A. M.

## ANNOUNCEMENTS

The 39th annual clinical congress of the American College of Surgeons will be held October 5 through 9, 1953, at Chicago, with headquarters in the Conrad Hilton Hotel. Surgical techniques and new developments in surgery will be covered, and the program will include formal scientific papers, panel discussions, symposia, postgraduate courses, surgical forums, medical motion pictures, ciné clinics, color television, and exhibits.

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The American Congress of Physical Medicine and Rehabilitation will hold its 31st annual scientific and clinical session at the Palmer House, Chicago, August 31 through September 4. Sessions are open to all members of the American Medical Association. Full information may be obtained from the Congress, 30 North Michigan Avenue, Chicago 2, Illinois.

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The Council on Postgraduate Medical Education of the American College of Chest Physicians, in cooperation with the respective state chapters and the staffs and faculties of the local hospitals and medical schools, will sponsor the 8th annual postgraduate course on diseases of the chest at the Hotel Knickerbocker, Chicago, September 28 through October 2.

## Cook County Graduate School of Medicine

### Postgraduate Courses—1953

**SURGERY**—Intensive Course in Surgical Technic, Two Weeks, starting September 14, September 28, October 12

Surgical Technic, Surgical Anatomy & Clinical Surgery, Four Weeks, starting October 26

Surgical Anatomy & Clinical Surgery, Two Weeks, starting August 17, November 9

Gallbladder Surgery, Ten Hours, starting October 26

General Surgery, One Week, starting October 5

Surgery of Colon & Rectum, One Week, starting September 21

Basic Principles in General Surgery, Two Weeks, starting September 21

Thoracic Surgery, One Week, starting October 12

Esophageal Surgery, One Week, starting October 19

Breast & Thyroid Surgery, One Week, starting October 26

Fractures & Traumatic Surgery, Two Weeks, starting October 26

**GYNECOLOGY**—Intensive Course, Two Weeks, starting September 21

Vaginal Approach to Pelvic Surgery, One Week, starting August 31

**OBSTETRICS**—Intensive Course, Two Weeks, starting October 5

**DERMATOLOGY**—Intensive Course, Two Weeks, starting October 19

**MEDICINE**—Electrocardiography & Heart Disease, Two Weeks, starting October 12

Intensive General Course, Two Weeks, starting September 28

Gastroenterology, Two Weeks, starting October 26

Allergy, One Month and Six Months, by appointment

**CYSTOSCOPY**—Ten-Day Practical Course starting every two weeks

**UROLOGY**—Intensive course, Two Weeks, starting September 28

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A similar postgraduate course will be held at the Hotel New Yorker, New York City, November 2-6. Tuition for each is \$75. Details may be secured from the American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

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The American Urological Association again this year is offering an award of \$1,000 for essays on the result of clinical or laboratory research in urology. Competition is limited to urologists who have been in such specific practice for not more than 10 years and to men in training to become urologists. Particulars of the contest may be secured from William P. Didusch, 1120 North Charles Street, Baltimore, Maryland. The contest closes February 1, 1954.

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A sectional meeting of the American College of Surgeons will be held in London, England, May 17-19, 1954, at the invitation of the surgeons of England who are honorary fellows. All physicians are invited to attend, and to be present also at a meeting of the Association of Surgeons of Great Britain and Ireland, to be held in Leeds, May 13 to 15, and a session of the International Society of Surgery, in Paris, immediately after the London meeting.

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The second International Congress of Cardiology will be held in Washington, D. C., September 12-15, 1954. It will be immediately followed by the annual scientific sessions of the American Heart Association, September 16-18.

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Physicians in Honolulu, Hawaii, will be hosts to the Sixth Pan-Pacific Surgical Congress, October 7-18, 1954, in Honolulu. The association office has been appointed travel agent for those wishing to attend. Information may be secured from F. J. Pinkerton, M.D., Pan-Pacific Surgical Association, Suite 7, Young Hotel Building, Honolulu, Hawaii.

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The National Gastroenterological Association will hold its annual convention and scientific session at the Biltmore Hotel, Los Angeles, October 12-14. The program will include a symposium on cirrhosis of the liver, peptic ulcer, diseases of the large bowel, and latest developments in cancer research. The sessions are open to all physicians without charge.

Immediately afterward, October 15-17, the association's annual course in postgraduate gastroenterology will be given at the Biltmore Hotel and the College of Medical Evangelists in Los Angeles. The course will be directed by Dr. Owen H. Wangenstein of

Minneapolis and Dr. I. Snapper of Chicago, assisted by a faculty from the medical schools of the Los Angeles vicinity. Only those who have matriculated in advance may attend. Details may be secured from the association, 1819 Broadway, New York 23, New York.

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The Arthritis and Rheumatism Foundation is offering research fellowships in the basic sciences related to arthritis as follows: (1) Predoctoral fellowships ranging from \$1,500 to \$3,000, tenable for one year with prospect of renewal; (2) Postdoctoral fellowships ranging from \$3,000 to \$6,000, tenable for one year with prospect of renewal; (3) Senior fellowships for experienced investigation, with an award of \$6,000 to \$7,500 per annum, tenable for five years. The deadline for applications is November 1, 1953. Information may be secured from the foundation, 23 West 45th Street, New York 36, New York.

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The South Dakota Board of Medical Examiners has announced the passage of legislation creating an annual registration fee for licensees in that state in the amount of \$2.00, effective January 1, 1954. Those licensed in that state and wishing to retain such licensure are asked to write the board, 300 First National Bank Building, Sioux Falls, South Dakota.

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The American Goiter Association again this year offers a prize award of \$300 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The essays, not exceeding 3,000 words in length, may cover either clinical or research investigations. Complete information may be secured from Dr. John C. McClintock, 1491½ Washington Avenue, Albany 10, New York.

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#### PUBLIC RELATIONS INSTITUTE

Courses in medical public relations will be offered at the A.M.A.'s second Public Relations Institute to be held September 2 and 3 at the Drake Hotel, Chicago.

Designed primarily for lay public relations employees of state and county medical societies, the program will include forums presented by societies in co-operation with local newspapers, tips for public relations programs on limited budgets, and the use of television in public relations. Films available for use by local medical societies will be previewed.

# THE JOURNAL

*of the*

## KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

Volume LIV

SEPTEMBER, 1953

No. 9

### Hysterectomy—A Clinical Consideration\*

C. Gordon Johnson, M.D.\*\*

New Orleans, Louisiana

We at Tulane do not agree completely with many statements made concerning the frequency of hysterectomy. We feel that this procedure is a necessary one where proper indications are present. We particularly feel that there is little place for such procedures as the Manchester operation, bilateral salpingectomy, cervical amputation and/or uterine suspensions, especially in women where pregnancy is no longer desirable. Certainly hysterectomy is the procedure of choice in such individuals. Menstruation or periodic bleeding is not necessary for the health of the female, either physiologically or psychologically.

Most reports concerning hysterectomy include a great percentage of so-called conservative procedures that have been done prior to the removal of the uterus, which so often becomes necessary. Tyrone,<sup>1</sup> in reporting on 2,000 personal hysterectomies in 1951, stated that 691 of his patients, or 35 per cent, had not been relieved of their symptoms by previous so-called conservative pelvic surgery, but were restored to complete health after removal of the uterus. Phaneuf,<sup>2</sup> in reporting a private series of hysterectomies in 1948, stated that about 60 per cent of his patients had been operated on previously for various complaints.

We shall discuss for you separately, abdominal and vaginal hysterectomy. May we emphasize at this time that these two procedures should not be considered competitive in any respect. Each has its own place, and all who do pelvic surgery should be equally capable in the performance of either procedure.

Each patient must be individually evaluated. We must consider the type and extent of pathology, his-

tory of previous pelvic surgery, obesity, and/or the presence or absence of uterine prolapse. The size of the uterus, its mobility, and the presence or absence of cystocele or rectocele are factors that certainly influence to a great extent the choice between the abdominal or the vaginal route. Surely one would not attempt the vaginal route for removal of a uterus that is firmly fixed by inflammatory adnexae or extensive pelvic endometriosis. We are equally sure that the abdominal route would not be advocated in the presence of considerable uterine prolapse. We cannot, however, agree with the advocates of vaginal hysterectomy for large uterine fibroids by morcellation. In our hands, abdominal hysterectomy is by far the safest procedure for removal of the uterus that has attained the size of a 3-month gestation or larger because of the presence of fibroids. We do not believe in doing a very difficult vaginal hysterectomy simply to prove to one's self or his resident that it can be done. The question of previous pelvic surgery as a contraindication to the vaginal approach is a logical one, and here individualization and one's experience are often the only answer. Certainly the vaginal route is preferable where repair of a cystocele and/or rectocele is necessary.

The common indications for abdominal hysterectomy in the presence of benign pelvic disease are: leiomyomata, pelvic inflammatory disease, pelvic endometriosis, extensive cystic cervicitis, benign uterine bleeding near or past the menopause, and occasionally benign ovarian tumors.

We feel that total abdominal hysterectomy should be done in the presence of leiomyomata causing uterine bleeding with or without pain. The question of when a myomectomy should be done, rather than a hysterectomy, can be answered in this manner. In the

\* Presented at the 94th annual session, Kansas Medical Society, May 4-7, 1953.

\*\* From the Department of Gynecology and Obstetrics, School of Medicine, Tulane University, and Browne-McHardy Clinic, New Orleans, Louisiana.



colored race myomectomy is seldom indicated because of the size and multiplicity of the tumors and the almost invariable association of pelvic inflammatory disease. Myomectomy is chiefly indicated in the white patient for sterility when the myomata is probably the only causative factor.

Pelvic inflammatory disease, as seen on our service at Charity Hospital in New Orleans, requires total hysterectomy in most instances, particularly where tubo-ovarian abscesses are present. Conservative surgery in the presence of extensive pelvic inflammatory disease usually means additional surgery. Fortunately, such extensive pathology is seldom seen in our private practice, but where it does occur the treatment should be as in the charity patient. We feel that total abdominal hysterectomy and salpingo-oophorectomy is the treatment of choice for chronic pelvic inflammatory disease when any of the following conditions exist: persistent low abdominal pain exaggerated during menstruation, irregular and/or prolonged uterine bleeding, and the presence of persistent, painful adnexal mass or masses. Where endometriosis requires removal of the adnexae, a total hysterectomy is always done. We never use radiation therapy for benign uterine bleeding near or after the menopause, preferring quite definitely total hysterectomy in such instances.

Most gynecologists today consider total hysterectomy with removal of the cervix along with the body of the uterus the procedure of choice when the abdominal route is used. There are many, however, who still feel that supravaginal hysterectomies have to be done occasionally, especially where endometriosis or pelvic inflammatory disease involves the uterus with considerable fixation, particularly in the region of the sigmoid. Certainly the evidence accumulated through many reports leaves little basis for controversy as to the relative superiority of total over supravaginal hysterectomy. The reasons we advocate the total procedure are:

1. Mortality and morbidity rates for total abdominal hysterectomy are lower than those encountered in supravaginal hysterectomies.

2. The frequency of return of patients with symptomatic cervical stumps. The symptoms commonly noted are leukorrhea, pelvic pain, backache, vaginal bleeding, dyspareunia, and urinary discomfort.

3. The possible development of malignancy or its presence in the cervix at the time of surgery. It has been reported that malignancy of the cervical stump after supravaginal hysterectomy has an incidence of from 2 to 8 per cent. Collins<sup>6</sup> reported that in patients with cervical stumps having bleeding as a symptom, 11.9 per cent had cancer of the cervix.

Our staff at Tulane<sup>3</sup> have for many years been in favor of total abdominal hysterectomy rather than

supravaginal hysterectomy. However, a few were still of the opinion that supravaginal hysterectomy was the procedure of choice in some instances, and their percentage of total hysterectomy for benign disease did not nearly approximate the percentage of those who had realized that total hysterectomy was the more desirable procedure. During a period beginning July 1, 1950, an attempt was made on the Tulane gynecological service of the Charity Hospital of Louisiana at New Orleans to show that total hysterectomy can be done safely in all instances that require removal of the uterus. Each year during the past 10 years on the Tulane gynecological service, there has been a continued decrease in the number of supravaginal procedures with a concomitant drop in the mortality rate.

In 1941 Miller and Prejean<sup>4</sup> reported 828 hysterectomies from the Tulane service for the years 1939 and 1940. Two hundred fifty-five, or 40 per cent of the 629 abdominal cases, were of the supravaginal type. In this group there were 7 deaths, or 2.75 per cent. There were 5 deaths among the 374 total abdominal hysterectomies, or 1.33 per cent. The mortality for the entire group of 828 hysterectomies was 1.68 per cent (Table 1).

TABLE 1  
HYSTERECTOMY  
TULANE UNIT—CHARITY HOSPITAL  
Jan. 1, 1939 to Jan. 1, 1941

Type		Mortality
	Total 374 (59.6%)	5 (1.33%)
Abdominal 629 (86.1%)	Supra-Vag. 255 (40.4%)	7 (2.75%)
Vaginal 199 (23.9%)		2 (1.00%)
Cases	828 (100%)	14 (1.68%)

During the 5-year period 1946 to 1951, there were 2,097 hysterectomies on the Tulane service at Charity Hospital. Of 1,546 abdominal procedures, 110 were supravaginal hysterectomies, or 7 per cent. There were 9 deaths among the 1,436 total abdominal hysterectomies, or .63 per cent, and 6 deaths among the 110 supravaginal group, or 5.4 per cent. The mortality for the entire group of 2,097 hysterectomies was 0.81 per cent (Table 2).

TABLE 2  
HYSTERECTOMY  
TULANE UNIT—CHARITY HOSPITAL  
Jan. 1946 to Jan. 1951

Type		Mortality
	Total 1,436 (93%)	9 (0.63%)
Abdominal 1,546 (74%)	Supra-Vag. 110 (7%)	6 (5.45%)
Vaginal 551 (26%)		2 (0.36%)
Cases	2,097 (100%)	17 (0.81%)

During the period July 1, 1950, to January 1, 1953, 745 hysterectomies were done on the Tulane service. Of the 511 abdominal hysterectomies done during that period, only 2, or .39 per cent, were of the supravaginal type. There were four deaths in the 511 abdominal cases, or .78 per cent. The mortality for the group of 745 hysterectomies was .53 per cent, there being 4 deaths, all in the total group (Table 3).

TABLE 3  
HYSTERECTOMY  
TULANE UNIT—CHARITY HOSPITAL  
July 1, 1950-January 1, 1953

Type		Total	Mortality
Abdominal	511 (68%)	509 (99.61%)	4 (.78%)
Vaginal	234 (32%)	Supra-Vag. 2 (.39%)	0 (0%)
Cases	745 (100%)		4 (.53%)

Since beginning private practice, I have performed 452 hysterectomies. Of the 279 abdominal type, 270, or 97 per cent, were total; and 9, or 3 per cent, were supravaginal. I have not performed a supravaginal hysterectomy since 1947. There were no deaths in this group of 452 hysterectomies (Table 4).

TABLE 4  
HYSTERECTOMY  
PERSONAL SERIES—1940-1953

Type		Total	Mortality
Abdominal	279 (62%)	270 (97%)	0 0.00
Vaginal	173 (38%)	Supra-Vag. 9 (3%)	0 0.00
Cases	452 (100%)		0 0.00

In spite of the fact that all patients in the recent series at Charity Hospital with abnormal cervixes were biopsied before hysterectomy, and all patients with abnormal bleeding at or past the menopause were curetted prior to operation, 9 cases of incidental cancer were discovered at histologic examination of the specimens removed.

It has been argued that the decrease in morbidity and mortality observed where total hysterectomy has been performed was due to the fact that this procedure was used in the more favorable cases, whilst the supravaginal procedure was reserved for the so-called bad risk case, or patients with extensive pelvic pathology.

In 1950 the chairman of the Tulane gynecological service established a rule that no supravaginal hysterectomies were to be done on this service. At the time of its enactment, this edict appeared to be somewhat far reaching and to our knowledge had not been attempted on a similar group of patients. It was only

by adopting such a rule, however, that a study could be made of the comparative value of the two procedures, utilizing the same material, staff, and facilities.

Radiation therapy and/or repeated uterine curettage for control of benign disease has not been used on the Tulane service since January, 1946. In my own practice, I have not used such therapy during the past 15 years. Patients with abnormal uterine bleeding, pelvic pain, or benign tumors were treated by hysterectomy, irrespective of the patient's age or physical condition. It is to be re-emphasized that in no case was the patient denied the benefit of hysterectomy because of any of these factors, provided they could be controlled before surgery.

Despite the request of the chairman of the department that no supravaginal hysterectomies be performed on the Tulane service, it was found that 2 of this type were done during this 30-month period. In the first case, a colored woman, age 34, with large fibroids and pelvic inflammatory disease, the cervix was left in because of so-called technical difficulty; however, this cervix was later removed vaginally at a second operation with ease. We are of the opinion that had the surgeon been a little more persistent in his efforts, a total hysterectomy could have been performed without jeopardizing the patient's life. In the second case, a colored woman, age 17, with large bilateral tubo-ovarian abscesses, the surgeon gave shock as his reason for not removing the cervix. It is interesting to note that after shock had successfully been combated, an incidental appendectomy was performed. Certainly in this case total hysterectomy could have been performed without increasing the risk to the patient.

As previously stated in this report, there were 9 cases of early cancer discovered on routine histologic examination of tissue removed at the time of operation. In 5 cases intraepithelial cancer of the cervix was discovered. This is an important finding as biopsy of these cervixes had previously failed to uncover the malignancy (Table 5).

TABLE 5  
HYSTERECTOMY  
TULANE UNIT—CHARITY HOSPITAL  
July 1950-July 1952  
CARCINOMA FOUND

Location	Type	No. Cases
Cervix	Carcinoma in Situ	5
Endometrium	Adenocarcinoma	2
Ovary	Papillary Cyst Adenocarcinoma	2
Total		9 1.48%

Among the 745 cases in this two-and-a-half-year period, there were 4 deaths. No deaths were encountered in which vaginal hysterectomy was performed.



In the 511 total abdominal hysterectomies performed, there were 4 deaths. No deaths occurred in the 2 cases in which supravaginal hysterectomy had been performed.

If total hysterectomy had been performed in the 2 cases where the supravaginal procedure was utilized, and had both these patients died as the result of this, a mortality figure of 1.10 per cent would have resulted, which is comparable to the rate encountered in the period 1946-1951, where only 93 per cent of the abdominal hysterectomies were of the total variety. This comparison is controlled as the same physical facilities, anesthesia, and practically the same staff were present in both groups, as were blood banks, antibiotics, and other chemotherapeutic agents. In not one of the 4 deaths reported in this series could the procedure of total hysterectomy be held accountable for the patient's demise.

The first death was that of a colored female, age 63, admitted with findings and symptoms of acute pelvic inflammation. A cul-de-sac puncture was done, followed by a colpotomy several days later. A cheesy material was obtained in both instances. On the 12th day she was operated on, and a total abdominal hysterectomy and bilateral salpingo-oophorectomy was performed because of a ruptured dermoid cyst. A diffuse peritonitis of the chemical type was present. This patient expired on the 33rd postoperative day as a result of peritonitis. No autopsy was obtained.

The second death was that of a colored woman, age 69, who was admitted with an acute abdomen and acute myocardial failure. She was operated on by the surgery department through a transverse abdominal incision at the level of the umbilicus. She was found to have degenerating fibroids and a ruptured tubo-ovarian abscess. Members of our gynecology staff were called, and a total abdominal hysterectomy and bilateral salpingo-oophorectomy was effected. She expired on the 3rd postoperative day, apparently the result of myocardial failure. No autopsy was obtained.

The third death occurred in a 34-year-old colored patient operated on for large fibroids and bilateral tubo-ovarian abscesses. Postoperatively she developed peritonitis and a wound disruption on the 10th day. She died 2 days after secondary wound closure. Autopsy revealed peritonitis and multiple abscesses of the kidneys.

The fourth death was a 56-year-old colored woman who had a hysterectomy and bilateral salpingo-oophorectomy because of degenerating large fibroids and tubo-ovarian abscess. She developed peritonitis and a vaginal vault abscess which was drained. She died on the 24th postoperative day. Autopsy revealed annular carcinoma of the sigmoid.

This study at Charity Hospital and experience in my own private practice indicate that it is possible to

perform total hysterectomy in every instance that requires removal of the uterus. This is true in all cases, irrespective of pelvic pathology or severe medical complications present. The mortality in this series compares favorably with that of all series reviewed. Since 1939 we have reduced our incidence of supravaginal hysterectomies from 40.4 per cent of the 629 abdominal cases, as reported by Miller and Prejean, to .39 per cent of the 511 abdominal cases reported from the Tulane service at Charity Hospital for the period July, 1950, to January, 1953. A concomitant decrease in mortality is noted as the number of supravaginal procedures decreases (Table 6). During the past 5 years in my private practice, I have performed 206 total abdominal hysterectomies and during this period have not done a supravaginal hysterectomy. The mortality in this group has been zero.

TABLE 6  
ABDOMINAL HYSTERECTOMY  
TULANE UNIT—CHARITY HOSPITAL

Period	Tot.	Mort.	Supra-Vag.	Mort.	All Cases	Mort.
Jan. 1939-Jan. 1940	374	1.33%	255	2.75%	629	1.90%
Jan. 1946-Jan. 1951	1,436	.63%	110	5.45%	1,546	.96%
Jul. 1950-Jan. 1953	509	.78%	2	0%	511	.78%

We do not believe that surgery is contraindicated because of cardiac status, obesity, hypertension, kidney disease, diabetes, or other complicating conditions in the patient having symptomatic benign pelvic pathology. These complicating factors, however, were adequately controlled before the patient was subjected to surgery. Therefore, this two-and-a-half year series represents a totally unselected group of patients. We realize that the dictum we followed on the Tulane service at Charity Hospital is contrary to general teaching. However, we believe that our results, particularly as to mortality and morbidity during this period, justify a continuance of this policy.

The complications that commonly follow this procedure are as follows: Urinary infections, as noted, head the list. This complication is one that is most difficult to prevent, but fortunately seldom becomes a serious one. Routine use of indwelling catheters is not recommended, but where catheterization becomes necessary, it is advisable to use one of the sulfonamide drugs or antibiotics in an attempt to prevent infection. We use indwelling catheters only where extensive anterior vaginal wall plastic has been done. One must also remember the importance of controlling residual urine in the bladder, for its presence often leads to infections that otherwise would not occur. Vaginal cuff hematomas and abscesses, along with abdominal wall hematomas and abscesses, comprise the second most common group of complications. The prevention of hematomas can be con-

trolled only by careful hemostasis. The incidence of vaginal cuff abscesses can probably be decreased by use of antibiotic vaginal suppositories pre- and post-operatively. There is no doubt that morbidity can be reduced by routine use of such suppositories. Vascular complications are rather infrequent, possibly because of better technique with less damage to important structures, use of antibiotics to control infections, and early ambulation to promote circulation (Table 7).

TABLE 7  
HYSTERECTOMY  
TULANE UNIT—CHARITY HOSPITAL  
July 1950-July 1952  
POSTOPERATIVE COMPLICATIONS

URINARY		
Retention and Infection	85	2
URINARY TRACT INJURIES		
Bladder	1	
Ureter	1	
HEMORRHAGE	1	
Vaginal Cuff	1	
VASCULAR	2	
Vena Cava Ligation	1	
CUFF	17	
Abscess and Hematoma		
WOUND	18	
Abscess and Hematoma	15	
Evisceration	3	
PULMONARY	5	
ILEUS AND OBSTRUCTION	6	
PAROTITIS	1	
NONE	401	
PATIENTS WITH PHYSIOLOGICAL MORBIDITY	74	

As we mentioned earlier, abdominal and vaginal hysterectomy should not be considered competitive in any respect. The ability to perform proper vaginal surgery is the dividing line between the general surgeon and the gynecologist. Most authors writing on vaginal hysterectomy emphasize that this operation is a safe procedure in the hands of experienced vaginal operators. Most authors also quote Dr. Sproat Haeney<sup>5</sup> who, in his discussion on vaginal hysterectomy in 1949, stated, "It is interesting to note that those who persist in perfecting themselves in the technique of vaginal hysterectomy gradually disregard more and more of the contraindications so insistently laid down by those with little or no familiarity with the operation." There is no question that this statement adequately describes the experience of many gynecologists.

We at Tulane feel that the vaginal approach is preferable where removal of the uterus is indicated. We do not require any special degree of prolapse but do require that the cervix and uterus itself be mobile. We prefer that some degree of relaxation of the vaginal supporting structures be present, but this point is not too strongly stressed, as the operation can often be done with little difficulty in a nulliparous individual. We feel that vaginal hysterectomy has no place in the treatment of carcinoma of the cervix or fundus.

There is no question that the vaginal approach is a safer procedure when surgery is necessary in an aged individual, and also in those having systemic medical disabilities. No one can deny that the vaginal approach carries the possibility of shock far less than that of the abdominal, the anesthesia is usually shorter, ileus seldom occurs, adhesions do not occur, and the patient often has a smoother and shorter convalescence.

We also feel that adnexal inspection should be carried on routinely and any adnexal pathology adequately dealt with through the vaginal approach. We feel that the main contraindications to vaginal hysterectomy are fixation of the uterus by pelvic inflammatory disease, or endometriosis, the presence of carcinoma of the cervix or fundus. May I again state that we do not advocate morcellation vaginally of large uterine fibroids, feeling that the abdominal approach in such instances is by far the safest procedure.

Broadly speaking, vaginal hysterectomy should not be used in instances where it would defeat its own purpose by introducing the added factor of trauma; there must always be sufficient space for the operative manipulations, and it must be possible to bring the uterus down freely. Using the technique in which the utero-sacral and cardinal ligaments are first severed from their attachment to the uterus, is often all that is needed to bring this organ well down into the vaginal canal, thus facilitating the operation.

We have recently reported on 2,588 hysterectomies, performed on the Tulane Gynecological Unit at the Charity Hospital of Louisiana at New Orleans, during a period from January, 1946, to July, 1952. There were 697 vaginal hysterectomies in this group, which is an incidence of 26.9 per cent. There were 2 deaths in this vaginal group, or .29 per cent. During the past 2 years on the same service, 62 per cent of the hysterectomies on white patients were done vaginally with no deaths (Table 8).

TABLE 8  
HYSTERECTOMY  
TULANE UNIT—CHARITY HOSPITAL  
Jan. 1, 1946-July 1, 1952

	No. Cases		Deaths	Mortality
Vaginal	697 (26.9%)		2	0.28%
Abdominal	1,891 (73.1%)		17	0.89%
	2,588 (100. %)		19	0.75%

Since beginning private practice, I have performed 452 hysterectomies. In this group there were 173 vaginal hysterectomies, which is an incidence of 38 per cent. During the past 2 years this percentage has been increased to 50 per cent. There have been no deaths in this group of 452 hysterectomies.



## CONCLUSIONS

Hysterectomy performed either by the abdominal or vaginal route is a comparatively safe procedure when done by the trained surgeon.

Total hysterectomy is the procedure of choice, because with removal of the cervix the common post-operative sequelae, such as pelvic pain and vaginal discharge, are eliminated, and the hazard of cervical cancer is removed.

It is possible to perform total hysterectomy in every instance that requires removal of the uterus. We do not believe that surgery is contraindicated because of cardiac status, obesity, hypertension, kidney disease, diabetes, or other complicating factors in the patient having symptomatic benign pelvic pathology. These complicating factors, however, must be adequately controlled before the patient is subjected to surgery.

During the past 10 years we at Tulane have reduced our incidence of supravaginal hysterectomy from 40 per cent, as reported in 1942, to .39 per cent in the group performed during the period July 1, 1950, to January 1, 1953. A concomitant decrease in

mortality has also been noted as the number of supravaginal procedures decreases.

We realize that the dictum followed on the Tulane service at Charity Hospital since July, 1950, is contrary to general teaching. However, we believe that the results, particularly as to mortality and morbidity, justify a continuance of this policy.

Vaginal hysterectomy well deserves its increasing position in importance because of its relative safety and excellent end results.

Hysterectomy, however, is a procedure that should never be undertaken lightly or inadvisedly. It should be done only when one is certain that no simpler method of relief is possible and the end results justify its performance. By following these basic principles, one will never be guilty of unnecessary surgery.

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## Three and a Half Years Experience With a Bone Bank

J. F. Lance, M.D.\*

Wichita, Kansas

We have had a bone bank in operation at St. Francis Hospital, Wichita, Kansas, for three and a half years now; and, although it is not practical or even advisable for most hospitals about the state to have such a facility available, it would seem wise for all physicians to be familiar with the technique and uses as well as the necessity and authority for a bone bank. It is with this thought in mind that we would like to report regarding our experience over the past three and a half years.

The necessity for additional bone for certain orthopedic operations has presented itself to surgeons on many occasions for as long as this type of surgery has been done. In certain patients, notably children, it is difficult or impossible to obtain amounts of bone to complete the operation in question by the usual means, i.e., with the aid of secondary operation on the patient himself or upon a bone donor, which is usually the father or mother of the patient. We have thus used homogenous bone for some time, but only for a short time have we had a method of preserving bone formerly discarded. Operations, such as spinal fusions for scoliosis or the filling of a large bone cyst, for example, present problems in which a large quantity of bone is nec-

essary and may not be obtainable from the patient himself.

Although the use of homogenous bone was first reported as early as 1878, it was not until 1942 that Alberto Inclan of Havana, Cuba, reported on the use of a preserved bone graft in orthopedic surgery. Alan DeForest Smith of New York City employed bone refrigerated for 18 days at about plus 2° to plus 5° centigrade in 1942, but did not report this fact. It was not until 1945 that a bone bank was first used at the New York Orthopedic Hospital. At the onset, bone which was formerly discarded in many operations was placed in an ordinary refrigerator at plus 2° to plus 5° centigrade where it was kept for periods of up to three weeks. This was shortly changed to a freezer type storage at minus 20° to minus 30° centigrade, where it was found bone could be kept for an indefinite period of time and used with good results. Undoubtedly, the rapid advance in manufacture of deep freeze equipment has tended to give impetus to the present-day use of preserved homogenous bone grafts.

I might mention here another method of storing bone which could have been utilized, i.e., the placing of the bone to be preserved into an aqueous merthiolate solution. This bone may be used without undue

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complications. However, this method is much more complicated, requiring frequent changing of solution and handling of the bone. Also, it means introducing a foreign, toxic substance into the operative wound.

Late in 1949 a "deep freeze" was obtained at St. Francis Hospital, Wichita, Kansas, and on January 3, 1950, our first entry to the bone bank was made. It so happened that our first bone was obtained from a 16-year-old boy who had experienced a sudden, traumatic death. Bone from a cadaver, removed within a few hours after death under surgical aseptic conditions and placed in the freezer, can be utilized just as well as bone removed from a live donor and placed in the bank. Other bone for our bank has come from the following sources:

1. Cadaver—tibia, fibula, ilium.
2. Ribs from non-infected and benign thoracotomy cases.
3. Amputations—tibia, fibula, os calcis, astragalus, and metatarsals.
4. Ilium.
5. Clavicle.
6. Patella.
7. Ulna.
8. Boiled bone from any of the previously-mentioned sources.

In all of these cases, the bone saved in the bank represented bone which would formerly have been discarded. When bone is placed into the bank, which is maintained at about minus 20° centigrade, the following data is obtained: the donor's name, his age, his serology report, the name of the doctor supplying the bone, and the type of bone. Formerly we obtained the blood type and the RH type; however, we, as well as other users of the bone bank, have found this information unnecessary. The bone is placed within a sterile jar, which is placed inside of another sterile jar. The bone is cultured in a brain broth preparation which is placed in an incubator for a period of not less than two weeks. Thanks to our laboratory and their careful checking of these cultures, we have yet to encounter our first case of post-operative infection following the use of bank bone. We have had to discard bone—yes—but we have never had an infection.

Upon withdrawing bone from the bank, the following data is entered on our records: the recipient's name, the type of operation being performed, and the date.

The bone obtained from the first donor is all gone now; however, there were several pieces used after being in the freezer for 18 months. The bone which had been in the freezer for 18 months was used with clinically as good a result as with any other bone used. This represents the successful use of bone stored longer than any other case reported to date.

On some operations, several bottles of bone have been used, and in other cases a portion of the bone from one bottle has been used, the remainder being recultured and returned to the bank. Every time a bottle of bone is opened and returned, it is recultured.

The contents of one bottle, which incidentally was the first entry, was used on seven different operations. No apparent harm to the bone results from the thawing and refreezing procedure.

Number of entries	190
Sterile entries	155
Contaminated entries discarded	32
Contaminated entries boiled and used	3
Number of operations in which bone bank used	160

Bone from the bank has been used in a great variety of operations to make up this total of 160 operations. The following is a fairly complete list:

Filling of bone cysts	11 cases
Congenital pseudoarthrosis of tibia	6 cases
Construction of hip shelf	4 cases
Spinal fusion	103 cases
a. Scoliosis, 47 cases	
b. Spondylolisthesis, 27 cases	
c. Others, 29 cases	
Fractures	8 cases
a. Fresh	
b. Nonunion	
Arthrodesis of various joints	10 cases
Used in other hospitals	10 cases
Others	8 cases

Although other writers have proved autogenous bone to be superior to homogenous or bank bone, clinically the bone used for our bank has accomplished its intended function as well as autogenous bone grafts. It has been tolerated by the host tissue in all cases, and there have been no cases of slough or infection. We have been able to successfully complete certain procedures with ease that would have been impossible or done at great risk and difficulty without bank bone.

In conclusion, it can safely be said that the development of the bone bank is one of the most important advances in orthopedic surgery; however, it should be emphasized that the use of bank bone is not intended to replace the use of autogenous bone but is to serve as an adjunct in grafting when it is impossible or impractical to obtain enough bone from autogenous sources.

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# A Venereal Disease Epidemiologic Study in Kansas City, Wyandotte County, Kansas

Le Grand B. Byington, M.D.,\* and Harry Wettig, Jr., A.B.\*\*

Kansas City, Kansas

Recognizing the need for more efficient contact interviewing and contact investigation in venereal disease control, the Kansas State Board of Health, in co-operation with the University of Kansas Medical Center and the Kansas City-Wyandotte County Department of Health, conducted a special school for public health nurses during the first five months of this year. Nurses from the state of Kansas were given training in venereal disease case finding techniques. The assistance of a health program representative from the United States Public Health Service was obtained to aid in this program. The purpose of this paper is to illustrate what can be accomplished through thorough contact interviewing and prompt investigation.

During the past several years the Kansas City, Wyandotte County, area has noted a steady decrease in reported early syphilis infections. In 1952, eight cases of primary and secondary syphilis were reported in this area. Two of these persons, 20 years of age, were white. The ratio of sexual contacts obtained per patient interviewed was 1.2 per patient, as compared to a national average of 3.5 contacts per patient. Investigation of these contacts resulted in the examination of 48 per cent of those named.

In the first five months of 1953, the reported incidence of early syphilis has more than tripled. At the end of May, a total of 28 cases of primary and secondary syphilis had been reported in this area. It is interesting to note that 68 per cent of these are between 13 and 21 years of age. Interview of these patients obtained the names of 4.5 sexual contacts per patient interviewed. Of the investigations complete at this writing, 87 per cent of these named contacts have been examined.

The epidemiological chart shown here is a typical result of thorough contact interview and investigation in white teenagers of Kansas City, Kansas, from January through May, 1953. The center of this chart is a white female, age 17, Case 5. This patient was found infected with secondary syphilis after being named as a sexual contact of four boys, all infected with primary syphilis. She gave the names of 23 other teenage boys, admitting that these were "the

only ones I can remember by name." All but one of her contacts have been located and placed under observation. Nine have been placed under treatment for primary syphilis, and one is under treatment for secondary syphilis.

Further investigation led to the location of a white female, age 21, Case 7, who was placed under treatment for secondary syphilis. This girl named eight sexual contacts ranging in age from 16 to 37. Her husband (11) and two other contacts were found infected with primary syphilis. Investigation discovered that Case 12 was reportedly touring Nebraska. The authorities there were notified on Monday, and on Tuesday night this boy was given initial treatment and advised to return to Kansas City to complete treatment for primary syphilis.

This epidemiologic chain has extended to Kansas City, Missouri, where two infections have been found. Case 6 was placed under treatment for early latent syphilis, and her six Kansas contacts are under observation. Case 8 was placed under treatment for primary syphilis, and his three Kansas contacts are under observation. One of these contacts had recently received penicillin for another complaint, and therefore it will be necessary to extend the period of observation to one year.

Completely isolated, at this time, from this chain of infection, is a 13-year-old white female, Case 19. This patient, complaining of numerous lesions of the genital area, was placed under treatment for secondary syphilis. Of her five sexual contacts, three have been examined and are not infected. We have been unable to locate the other two contacts. The source of her infection is still unknown.

The development of this epidemiologic chart is the result of efficient interview and prompt field investigation. From the 16 cases under treatment in Kansas City, Kansas, 64 contacts were obtained. All but three of these have been located and placed under observation. Infected contacts were found early in the primary or secondary stage, before they were able to infect many other people. It would be interesting to consider how many additional infections were prevented through early location and treatment of those who were infected, as shown by the chart. Such prompt investigation is possible only when the physician who diagnoses the case makes immediate

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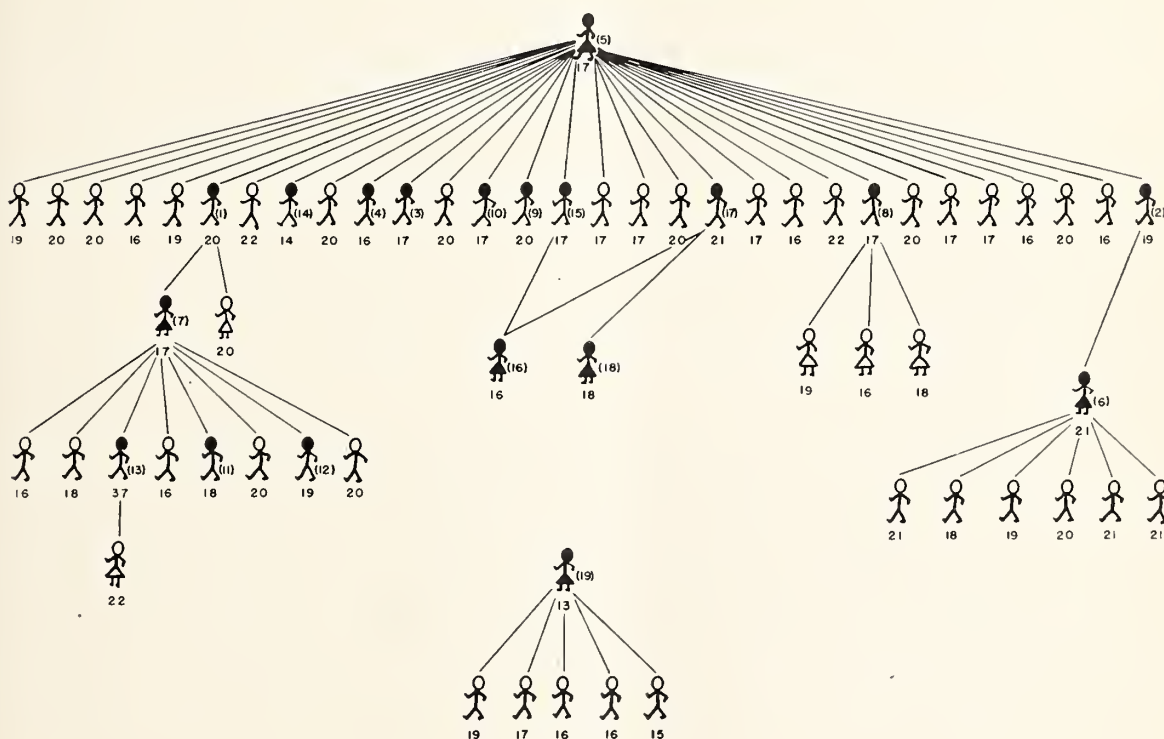
\*\* Health Program Representative, U.S.P.H.S.

use of the epidemiological services available to him. Persons skilled in contact interview and investigation are available from the state and local departments of health to talk with the private physician's patient who is infected with early syphilis. The department of

health and the private physician can therefore work to reduce the incidence of early syphilis in our teenage population, and the patient can be encouraged to complete treatment under private practitioners or at the health department, as the physician desires.

## EPIDEMIOLOGICAL STUDY OF EARLY SYPHILIS AMONG WHITE TEENAGERS IN KANSAS CITY, KANS.

JANUARY THROUGH MAY, 1953



■ Early Syphilis Cases  
□ Contacts - Negative Diagnosis  
(5) Case Numbers  
17 Age of Person

Kansas City-Wyandotte County  
Health Department  
Kansas City, Kansas

Silence is one great art of conversation. He is not a fool who knows when to hold his tongue; and a person may gain credit for sense, eloquence, wit, who merely says nothing to lessen the opinion which others have of these qualities in themselves.

—William Hazlitt



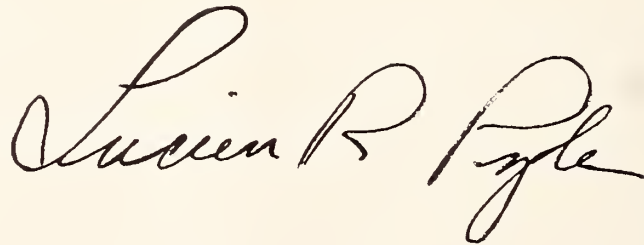
## PRESIDENT'S PAGE

No doubt you often muse as you drive along on the way to make a call as to why doctors and medical societies should interest themselves in economics and politics. I think that we can simply answer this by saying that it is a natural evolution that has become necessary to keep in pace with the "changing times."

In its inception, the primary purpose of a medical society was the dissemination of scientific information. But as civilization has advanced and society has become more complex, the problems facing medicine have also developed many facets. Certain of these entries are purely at our own instigation. For instance, through study and experience, we believe and advise our patients that certain rules and regulations should be made to safeguard the public from epidemics, industrial hazards, charlatans, food poisoning, etc. Thus we gave birth to the Board of Health, and we gave it a legal status by having it incorporated in the laws of our state. We have asked for and have obtained a medical practice act.

Both of these have two basic premises: (1) An entirely altruistic premise for the protection of the people of our state and country. (2) The other premise, entirely unselfish, is the jealously guarded and ever elevated standard of medical education and medical practice. We have valiantly defended and fought for the principles in which we believe. I trust and hope that we will always valiantly fight for those principles.

Thus we have voluntarily thrust our foot in the door of politics and economics. We will never be able to withdraw that foot if we expect to survive and to maintain our rightful position in the sphere of society.

A handwritten signature in cursive script, reading "Lucien R. Fyfe". The signature is written in dark ink and is positioned at the bottom of the page, below the main body of text.

## EDITORIAL COMMENT

### THE PHYSICIAN'S ROLE IN ADOPTIONS

*Editor's Note. The following editorial was prepared for the JOURNAL by David E. Gray, M.D., chairman of the Committee on Maternal Welfare of the Kansas Medical Society.*

Recently the Committee on Maternal Welfare met with representatives of various private and public child placement agencies in an effort to become more familiar with their problems. Obviously, these agencies have many activities of no immediate concern to this committee, but it was felt that certain points of discussion regarding the placement of newborn babies warranted more general dissemination.

Any physician who performs deliveries is certain to be approached sooner or later by some couple hoping to gain his co-operation in obtaining a baby for adoption. The agencies have long felt that the physician who assumed such an obligation was unwise, if not actually performing an illegal act, in so doing. The committee attempted to balance the factors on both sides and arrive at some recommendations.

Without doubt, the peculiar and apparently insoluble core of the problem is the great disparity between demand and supply, currently estimated at about ten to one. So long as the reproductive process continues at its present long and somewhat haphazard course, there can never be enough children unwanted by their natural parents to gratify the desires of prospective adoptive parents. Immediately, then, the available supply is subjected to the same pressures as any other scarce commodity in the market place. This very situation produces many of the criticisms leveled at placement agencies and should warn physicians not to consider themselves omniscient where passing out babies is concerned. In couples seeking children, it is this shortage which brings about the frustrations and antagonisms they direct toward the agencies. So, they contact the physician with complaints of delay, procrastination, and "unnecessary" investigations. They present a strongly emotional case for by-passing such "red tape" and precipitate a conflict between the physician and the agencies, where there should be mutual assistance and co-operation. It is this great demand which prompts the agencies to adopt a policy of caution and exhaustive investigation before placing a child.

The complaint that a long period of time elapses between application and placement should be no complaint, according to the agencies, because it is a means

of protecting the prospective parents and the child as well, a precaution Mother Nature does not always take. The adoptive home is studied in all of its aspects. Adequate background information is obtained on the natural parents, which is of value in the prognosis of the infant. Only rarely, if ever, will the individual physician be in a position to determine all aspects of the situation as well as the agency can.

The objection is raised, then, that natural parents take their chances, and certainly the offspring has nothing to say about his natural parents. Why must adoptive parents and babies be surrounded by this "unnatural" exploration and study when they, the former at least, would be willing to assume a certain risk in the results? Such are the ways of life, say the agencies, and they are the first to point out that adoption is an unnatural process which should be strictly and cautiously executed. So long as the responsibility is theirs, it is only wise that they respect that responsibility to the greatest degree, not disregard it for some expedient based on emotion or financial remuneration.

Placement agencies, by covering a wide territory, can avoid one common source of trouble, the placement of a baby in the same community as the natural parents. The objection to this situation is obvious, yet this frequently results when the physician places a child directly. No mother can sign her child over to adoptive parents legally without their names appearing on the release, and, unless the procedure is pursued illegally, she then knows where her baby is going. In agency transactions, the baby is assigned to the agency, keeping the personalities completely apart. The agency's investigation insures that both natural parents give complete and legal permission for the adoption and, further, that both adoptive parents are wholeheartedly in accord with the plan and are not likely to change their minds.

A physician can usually offer the natural mother one advantage which the various agencies cannot. Through him, the adoptive parents are glad to defray part or all of the hospital and professional charges. No agency is sufficiently well off at the moment to meet this challenge. This, however, is the point of maximum vulnerability for the physician since such a practice, however innocent and legitimate, inspires lurid "black market" charges in the Sunday supplement.

The physician is motivated primarily by his desire to be of assistance, either to the mother or to the adoptive parents, or to both. If he could offer the same assurance of control and eventual success in all areas of the procedure as the agencies can, there could be no objection to his activities. Insofar as he cannot offer that assurance, he fails to fulfill the responsibility he has assumed and invites grief and



dissension where he intended to bring happiness and harmony.

Locally, at least, the agencies have admittedly failed in one phase of their endeavor. That is in acquainting physicians with their methods, standards, and procedures and thus encouraging the co-operation of the medical profession. The committee, therefore, decided to take this means of presenting these points which the average physician may have overlooked. It has urged the agencies to keep the profession better informed of their assistance and services to the mother, the child, the adoptive parents, and the physician. Those physicians who may meet such problems are similarly urged to watch for and give adequate attention to any information releases originating from these agencies.

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### LICENSE RENEWAL

The third of a series of editorials on legal subjects concerning the practice of medicine relates to the annual renewal of a license. This procedure is so simple that the requirement is sometimes overlooked, which could result in serious consequences. For that reason, and because of a change in the law, this subject is discussed in this issue.

Once the so-called permanent license to practice medicine and surgery in Kansas has been obtained, there remain two important requirements that must be met if such license is to be kept valid. The first of these needs to be performed only once at the beginning of each location of practice, while the second is required annually. Failure to comply actually nullifies the license and might well create a situation where malpractice insurance is of no effect. Moreover, the responsibility for carrying out these requirements rests with the individual.

The first requires that each license shall be recorded within 30 days after its issuance, in the office of the county clerk of the county in which the physician resides. In case of a non-resident of this state, such record shall be made in the office of the clerk of the county in which he expects to practice. The cost shall not exceed one dollar. Once that has been accomplished, it need not be repeated except in case of relocation in a different county.

Of only passing interest to the physician, this law further states that the list of such certificates shall be a matter of public record and open for inspection during regular business hours in the office of the county clerk. He is also required, between the 1st and the 20th of December in each year, to furnish the secretary of the Kansas State Board of Medical Registration and Examination a complete list of the names of all physicians whose licenses are recorded in

his office and the names of those who moved out of the county or who have died during the year.

The consequences of a physician's failure to comply with this law are important, however, and appear in the General Statutes of Kansas, 1949, in Chapter 65, Section 1003. In this paragraph will be found the above mentioned requirements and a further significant statement. The physician shall be responsible for having this done and "...until such certificate of license is recorded he shall not exercise any of the rights or privileges therein conferred."

The second problem concerns the annual renewal. Physicians often speak of a permanent license in contrast with a temporary permit. While that distinction is valid, it is not strictly accurate in that the permanent license is issued for only one year. It is true that renewal is automatic if accomplished within the required time, but it is also true that the license is of no effect unless this law is complied with. This also becomes the responsibility of each individual physician, and neglect can result in the physician practicing without a license and being unaware of that fact.

The 1953 Kansas legislature changed this portion of the medical practice act, so a section of the General Statutes of 1949 on this subject will be incorrect. This will ultimately appear in the 1953 supplement, but for now may be found in Chapter 288 of the 1953 Session Laws of Kansas. Again it involves Chapter 65, and this time Section 1004a. The only change establishes an increase of the renewal fee which was one dollar and now reads "not to exceed five dollars." The actual amount shall be set by the board and for this year remains at one dollar.

This law states that the secretary of the Kansas State Board of Medical Registration and Examination shall send a written notice on the first day of July in each year "to the last known address of every holder of such certificate within this state." This shall contain a notice that the renewal is due and the amount required. The important feature of this section is that the secretary is not required to send a second notice, nor need he attempt to locate physicians whose notices are returned because of address changes. In other words, the physician is responsible for the renewal of his license whether or not he receives a reminder. Incidentally, the work of the secretary of this board could be made much easier if every license holder notified him whenever the doctor changed his address.

The next item of importance is that renewal is assured if the fee is received on or before the 1st day of October. The doctor, therefore, has three months in which to get this done, but in case of delay several results might apply. First, a penalty is added by law. The renewal fee paid after October 1 becomes

\$10, and, secondly, renewal will be granted only "if satisfactory proof at that time is submitted of his moral fitness."

Of more interest to the physician is that if the renewal fee is not paid by October 1 of each year "...said secretary shall strike from the register the name of such holder..." which can only mean that the doctor who practices under such circumstances is practicing without a license. As said earlier, a provision is made to correct this neglect on his part, but the danger to the doctor who practices without a license cannot be overemphasized. Therefore, if it has not already been cared for, this renewal fee should be sent immediately to O. W. Davidson, M.D., Secretary, Kansas State Board of Medical Registration and Examination, 864 New Brotherhood Building, Kansas City, Kansas.

### LIFE, LIBERTY, AND THE PURSUIT OF HAPPINESS

Once, a very long while ago, a group of pioneers established a code for freedom. It happened in 1776, to be exact, and the location was a wilderness that ultimately became the United States of America. Their manuscript was a battle cry presaging storm and stress but, with the victory, a golden era of prosperity arrived to make the story read like a fairy tale.

And, as in the fairy tale, we awake to find it isn't true. It was true once, a soft, pleasant, dreamy truth that evaporated so silently we didn't miss any of its parts until all had disappeared. And then? And then we spend our time in nostalgic recollection of the days that used to be.

Those were the days of knights in shining armor and of dragons. Heroic battles raged, fierce encounters shook the hilltops, but the hero won over his

adversary or died advancing. His creed was easy to believe in. He gave his life, if needed, to prevent the compromise of truth.

Truth almost always won. It won the dramatic episode following 1776 when these pioneers wrote into the Declaration of Independence that all mankind was entitled, among other things, to Life, Liberty, and the Pursuit of Happiness. It built the greatest nation ever to exist upon the face of the earth. It brought prosperity and the highest standard of living ever known to man.

Today this appears to have happened in a dream. There was no violence, no explosion, no storm. The fairy tale just disintegrated, and we stand in a strange, harsh world bewildered and unfamiliar in our new surroundings. A little ashamed of ourselves, we are, because our hearts yearn for what we remember, but public opinion forbids us to turn back.

So in that way the final battle is lost forever. The most amazing part is that the ultimate victory was not a war at all. It came silently and in stealth. It was the crushing weight of mediocrity that annihilated truth. This force conquered because we forgot to strive for achievement. We lost our joy in conquest. We compromised with truth. We standardized our lives, and the average became our king.

The average must always be confusion, an unnatural compromise—half truth and half a lie. It can never completely accept any honest stand nor ever completely stamp it out. So, having denounced the only truth we ever knew, having turned our backs on what we call a fairy tale, we find ourselves hopelessly wheeling within a void without a goal, without a course to steer by.

But look! All this is crying to call back a dream. Who are we to sweep against the tide? Or can we even yet?

### SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

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Lester E. McGonigle, M.D.  
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## PROGRESS IN HEALTH INSURANCE

The American Medical Association has recently published a pamphlet analyzing and discussing the various physician sponsored insurance plans in the United States. This provided material for a review of Kansas Blue Shield which has not appeared in this publication for some time and may contain information which has been forgotten by the profession of this state.

Voluntary health insurance has grown rapidly in the United States since 1940. Before that time, a few small ventures were tried in the Pacific Northwest. Six new plans came into existence in 1940, and, by the end of 1952, there were 83 health insurance programs approved by medical societies in the United States. Growth in enrollment is even more dramatic because, at the end of 1945, there were still less than 3,000,000 people insured. At the end of 1952, the total had grown to 27,686,575. This, it should be understood, includes only the medical society sponsored plans. It does not count the many more who are insured for similar benefits with commercially operated companies.

It is of interest that approximately half these plans present a combination of service and cash indemnity programs. Almost exactly one-fourth offer service only and one-fourth cash indemnity only. Another table presents the story of disbursements. As an example, the lowest rates listed by any such program show that 65 per cent of the premium is spent for services rendered. The highest is 90 per cent. There are numerous reasons for this wide difference, such as the fact that new programs will always have a lower claim rate in the beginning because of waiting periods, etc. The average, however, was 78.6 per cent. The average for administrative expense was 11.05 per cent of the gross earned income. Here also there is a considerable range, beginning with a low of 6 per cent to a high of 26 per cent.

National coverage is now offered on a geographical basis. There are voluntary health insurance programs sponsored by medical societies available in all areas of the United States. During the time of the greatest expansion, in fact early during that period, this state organized Kansas Physicians' Service with home offices at 603 Topeka Boulevard, Topeka, Kansas. The one person to whom much of the credit for a successful beginning must be given is Barrett A. Nelson, M.D., Manhattan, who spent innumerable hours studying this problem and advising the profession of Kansas concerning its many aspects, and who became its first, dynamic president. Today the president is Henry S. Blake, M.D., of Topeka.

Kansas Physicians' Service, now known as Blue Shield, was organized in December of 1945 under a special enabling act passed by the Kansas legislature early in that year. The first services began in January, 1946. It was organized and sponsored by the Kansas Medical Society and has continued to be among the major projects of this organization since its beginning. The governing body consists of 21 directors, of whom 18 are physicians and 3 laymen. The area covered is the entire state except for Johnson and Wyandotte counties. The last two were excluded because of their previous engagement in another similar program involving the Greater Kansas City area.

The type of contract here is a combination of service and cash benefits. Persons at any income level are eligible to subscribe, but individuals with an income of under \$2,000 annually and families with incomes of less than \$3,000 are eligible for service benefits. Those with incomes in excess of the above amounts receive indemnity benefits.

There are many other things that might be stated about Kansas Blue Shield, but most significant is the story of the number of persons enrolled as of December 31, 1952. At that time there were 295,106 in the Kansas program. There were in the United States five such programs with 1,000,000 or more enrolled. They were, quite naturally, in the larger states, Michigan, New York, Pennsylvania, Massachusetts, and Ohio. Kansas is among 30 that have more than 250,000 and has shown a continual increase since its beginning.

The Kansas program, along with others, is growing also in other ways than statistically. Kansas physicians have always shown a willingness to experiment with new methods of performing a better service for the public. At present two special committees within the medical society are engaged in projects of this type. An experiment now is under way in providing additional benefits for catastrophic illnesses, and Kansas is among a small group that is working in this area. There are other experiments being carried on throughout the country which are also followed with much interest in this state and may from time to time be adopted into the Kansas Blue Shield program.

In general, the Kansas Medical Society takes pride in its participation in this very large and worthwhile public service project. The program, not yet 10 years old, is, quite naturally, experiencing growing pains. There are many things that need to be improved, but as rapidly as workable solutions can be obtained these improvements become a part of the program. Physicians of Kansas are co-operating in this regard, and, by the very fact of continually increased enrollment, Kansas Blue Shield has demonstrated its usefulness to the citizens of this state.

# Carcinoma of the Thyroid: Papillary Adenocarcinoma Occurring in Twins and a Case of Hürthle Cell Carcinoma

Tumor Conference\*

Edited by H. I. Firminger, M.D., and F. R. Skelton, M.D.\*\*

Dr. Helwig: Today we have three extraordinary cases, including identical twins with papillary carcinomas developing at the same time and involving the same lobe of the thyroid with metastases to cervical lymph nodes on the same side. Cancer of other organs occurring in twins is familiar to all of you, I am sure, because, being extraordinary, it is usually reported. With what frequency it occurs I do not know, but I am sure it must be very rare. Some years ago, a former professor of pediatrics here had two young girls, twins, who simultaneously developed acute Basedow's disease, but I think these two cases today are even more extraordinary.

Dr. Nesselrode, would you give the histories?

## CASE NO. 53-50

Dr. Nesselrode: The first twin was a 24-year-old white nurse who was admitted to this hospital on March 21, 1953. Prior to admission she had noted a couple of enlarged nodes on the right side of her neck for two months, several other nodes for three weeks, and a slight weight loss for one week. There were no symptoms of hyperthyroidism except for occasional paroxysmal tachycardia. A lymph node biopsy on March 18, 1953, was reported as metastatic papillary adenocarcinoma from the thyroid gland. The patient was admitted for a total thyroidectomy and radical neck dissection.

Physical examination revealed a palpable, discrete, non-tender node in the right posterior cervical chain and in the sternoclavicular region. There was a healing biopsy scar on the right side of the neck. The thyroid was not palpable. The blood pressure was 108/60, and the pulse was 88. The remainder of the physical examination was normal and  $I^{131}$  uptake was within normal limits. Other laboratory studies were negative.

On March 23, 1953, a total thyroidectomy and right radical neck dissection was performed. The postoperative course was complicated by hypocalcemia and tetany.

\* Cancer teaching activities aided by a grant from the National Cancer Institute and the Kansas Division of the American Cancer Society.

\*\* Trainee of the National Cancer Institute.

## CASE NO. 53-51

The second twin was a teacher who was admitted to this hospital on March 24 in no acute distress. After the patient learned that her twin sister had been found to have carcinoma of the thyroid gland, she consulted a doctor who found a similar palpable lymph node in her neck. She was admitted to this hospital for study and treatment.

Physical examination revealed a single, enlarged posterior cervical node on the right side and a palpable right lobe of the thyroid. The remainder of the physical examination was within normal limits.  $I^{131}$  uptake was normal, and other laboratory studies were negative.

On March 26 a total thyroidectomy and right radical neck dissection was performed, and the postoperative course was uneventful.

Dr. Helwig: Dr. Boley, would you tell us about the pathological findings in these two cases?

Dr. Boley: The biopsied cervical lymph node in the first case measured 1.3 x 1 x 0.7 cm. and was almost entirely replaced by tumor; only a little rim of lymphoid tissue remained about the periphery. At the subsequent operation, the right lobe of the thyroid contained several white tumor nodules which measured up to 1.5 cm. in diameter. There was also a small white nodule in the left lobe, and lymph nodes on the right side contained white tumor tissue. Microscopically both tumor and metastases were similar in appearance. The greater part of the tumor was composed of acini, often containing colloid, but other parts were predominantly papillary. There was some variation in the morphologic characteristics of the cells. In the right lobe there was blood vessel invasion by tumor. The small nodule in the left lobe also proved to be tumor microscopically.

In the second case, the tumor tissue in the right lobe was found to be more papillary than in the first case. Only occasionally were there acini with colloid. Only one lymph node was found which contained tumor, and this was proved by frozen section at the time of operation.

Dr. Helwig: When one finds papillary, thyroid-appearing tissue in a cervical lymph node, he can't



be sure that there is not carcinoma in the homolateral lobe or elsewhere in the thyroid, even though he cannot see the lesion grossly. About a year or more ago, I had one that I couldn't find grossly even by careful section of the lobe with a razor blade. After it was fixed, my assistant looked at it and saw a little dimple-like depression of the capsule of the gland. Histologic section of that area showed a lesion just small enough that the entire tumor could be seen under the low power magnification of the microscope. Furthermore, at Memorial Hospital in New York, about the same time that we had this microscopic primary, they reported a small series of thyroid cancer cases<sup>1</sup> where it was necessary to do almost serial sections of glands before they found them. That's probably a shock for the old original idea that some of these arise in the so-called "lateral aberrant component" rather than being primary in the thyroid gland. I think everybody now feels that these "aberrant" thyroid masses are all metastatic, and the lateral component as the primary source has been largely discounted.

What was the relative grade of malignancy of

these tumors, Dr. Boley, and how much significance do you attach to vascular invasion in this lymphangial invasive type of papillary carcinoma?

Dr. Boley: Both tumors were of low grade malignancy. In the first case, if there had been no lymph node metastases or blood vessel invasion, I think it would be difficult to say it was cancer rather than adenoma. In the second case, there was some variation in the papillary parts of the tumor and slight extension outside the capsule. I did not find blood vessel invasion but, as I mentioned, there was one lymph node containing metastatic carcinoma. When one encounters these rather well differentiated tumors, I think it's very difficult to distinguish them from adenomas. Under these circumstances, blood vessel invasion is considered by some<sup>2</sup> as one of the prime criteria of malignancy versus benignancy in such tumors. I have been more or less inclined to rely on blood vessel and capsular invasion, despite the fact that you can have blood vessel invasion with a benign course.<sup>3</sup>

Dr. Helwig: Dr. Robinson, would you discuss these two cases?

Dr. Robinson: The problem in these two young ladies is exceedingly interesting from many standpoints: first, the clinical picture; second, the pathological implications; and third, the undisputed fact that neoplasms in identical twins do occur, and we should be on the lookout for them.

Dr. Max Allen asked me to see the first young lady to do a biopsy on her neck. She had a firm node in the right side of her neck, slightly fixed to the surrounding fascial structures but easily dissected out. We thought at the time that it was neoplastic, but it seemed more like one of the lymphomata. We got back the pathological report, as you heard, and arranged to have this girl admitted to the hospital. It was the very morning she was being admitted that her twin sister stopped me in the hall and said, "Doctor, I don't know about this, but I have a lump in my neck about the same place, and I'd like to have you feel it." So I examined it, and it felt quite the same as had the node in the neck of her sister. We arranged to admit her, too, and did the two operations about three days apart.

Now you might ask, why did we do what we did in the manner that we did it? With a diagnosis of metastatic carcinoma in a lymph node from the thyroid, it's essential that the entire thyroid be removed, except for a very small amount of thyroid tissue. In these cases, a radical neck dissection was also done. They elected to have Dr. Orr do the total thyroidectomy and to have me do the radical neck dissection immediately following. We did the identical procedure for the two girls, and the findings were essentially the same, except that the process was not

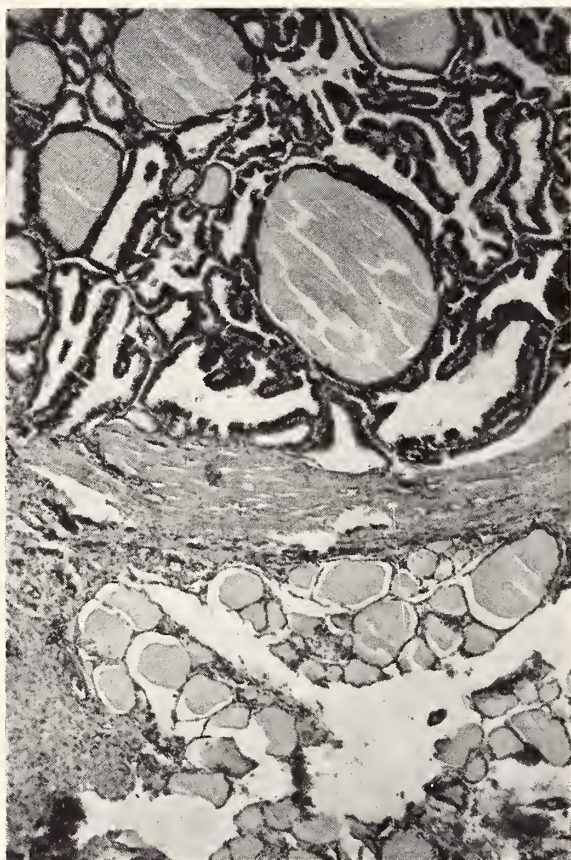


Figure 1. Photomicrograph of the thyroid gland from one of the twins showing the papillary nature of the adenocarcinoma, above, which is separated from the normal thyroid, below. Autoradiogram of a similar area showed marked uptake of  $I^{131}$  by the normal thyroid tissue in contrast to almost total absence of uptake by the tumor tissue. Hematoxylin and eosin, X 50.

quite as pronounced or as far along in the second case. The wounds healed nicely, and we followed with radiation therapy of two different types, external radiation therapy and radioactive iodine. The dosage of radioactive iodine was not great; one of the girls was pregnant, and we wanted to avoid any possible damage to the fetus.

Dr. Max Allen is planning further radioactive iodine treatment, as seems indicated. We think it is important to follow these girls, and will follow them at regular two-month intervals for the first year or two, and after that perhaps every three or four months for some little time.

In connection with the implications of twinning and neoplasms, it seems most timely that recently there was a nice, short editorial in the *J. A. M. A.* relating to this problem, entitled "Neoplasms in Identical Twins."<sup>4</sup>

There was a study by Macklin<sup>5</sup> in 1940 concerning the incidence of neoplasms in twins in which the incidence of neoplasms in identical twins was compared with that in fraternal twins. She found in identical twins, in which one member had cancer, that the other twin had cancer in 60 per cent of the cases, with similar tumors occurring in almost 95 per cent. The difference in age at the time of onset of symptoms in the pairs of twins averaged 1½ years. In contrast, fraternal twins with cancer showed that both members had cancer in only 35 per cent of cases, and just over 50 per cent of these had similar tumors. The average difference in age at the time of onset of symptoms in the fraternal twins was 6.3 years.

Dr. Helwig: Some years ago Dr. Macklin also made a study of the occurrence in sisters of carcinoma of the same breast.<sup>6</sup> The frequency of occurrence of carcinoma in the same breast in sisters is considerably greater than can be accounted for by chance alone. Some figures were given, which someone subjected to mathematical analysis, and it was found that the chance of two daughters of a mother having carcinoma of the left breast developing carcinoma of the left breast would be 10 times less likely than drawing a perfect bridge hand. But when we see over 60 per cent in identical twins, this would raise that tremendously; I should think it would be like drawing perfect hands every night for a year.

Dr. Litton: Dr. Helwig, I'd like to summarize the radiation therapy given in these cases. As far as the diagnostic studies with radioactive iodine are concerned, 200 microcuries and 500 microcuries, respectively, were given initially. Their uptake determinations over the thyroid areas were something like 10 per cent and 15 per cent, and excretion studies showed that about 80 per cent was excreted in the urine, which would indicate to us that there was

essentially no functioning metastatic tissue anywhere. As Dr. Robinson has said, it is not customary to take out all the thyroid tissue at surgery, and in our diagnostic studies following total thyroidectomy we not infrequently get as much as 20 per cent  $I^{131}$  uptake over the thyroid area. So postoperatively each of the girls was given 45 millicuries of radioactive iodine orally for the purpose of complete ablation of functioning thyroid tissue, and x-ray therapy amounting to a total depth dose of 3,000 r to the right cervical area.

Dr. Helwig: I believe it might be well to mention that paradoxically this type of tumor, which is a well differentiated tumor in contrast to the highly undifferentiated round cell, spindle cell, or pleomorphic cell tumors, is a relatively radiation-responsive tumor. At the Mayo Clinic, some surgeons take out the homolateral lobe and, if there are no evident nodes, they radiate and feel that may be adequate because these tumors do respond nicely. So I would think, under the circumstances, that you could feel pretty secure about what you've given in this instance.

Were any autoradiograms made, and what did they show?

Dr. Bly: We did both autoradiograms and radioisotope assays on the various thyroid tissues and lymph nodes removed surgically from the two girls. Normal thyroid tissue showed very good uptake. The areas of completely carcinomatous tissue in the thyroid or lymph nodes had an average of something like 0.8 counts per minute per mg. of tissue, in contrast to about 150 counts per minute per mg. of the normal thyroid tissue. In other words, the cancerous tissue in these girls had less than 1 per cent as high an uptake of  $I^{131}$  as the normal thyroid tissue. We recall that these are both papillary adenocarcinomas of the thyroid, which show in general considerably less uptake than well differentiated acinar colloid-forming types of carcinoma. However, it must be remembered that some papillary carcinomas and some colloid carcinomas do show radioiodine uptake, and that it is conceivably possible in some of these to extirpate metastases and any remaining thyroid by internal radiation. However, complete success by this means is not common.

We had one patient with cancer of the thyroid at the University of Rochester who received a total of about a curie and a half. He got 400 millicuries at one dose, 600 at the second dose, and 400 at the third dose, and there were still metastases composed of normal-looking thyroid acinar tissue and containing radioactive iodine located in the iliac crest, vertebrae, and various other areas. Even with that intensive radiation by radioiodine which some of the glands had taken up, they had not been sensitive enough to be knocked out.



Dr. Helwig: It has been demonstrated<sup>7</sup> that the ability of metastatic tumors to take up radioactive iodine is increased after the thyroid has been removed surgically or knocked out by internal  $I^{131}$  irradiation or by thiouracil administration. This is presumably mediated by thyrotropic hormone of the pituitary and can be induced or accentuated by administration of this hormone prior to giving radioactive iodine.

Dr. Robinson: Does anyone know the effect of radioactive iodine on the fetus, and what one might expect to happen?

Dr. Helwig: There have been reports<sup>7</sup> of sterility as a result of radioactive iodine knocking out the ovary, but I don't know how frequently it occurs.

Dr. Bly: In these two patients, particularly in one patient, it was found that most of the iodine was excreted in the urine. Any taken up by the fetus would be taken up in the thyroid gland. The pregnant girl postoperatively had 45 millicuries, which is not a large therapeutic dose for thyroid cancer. However, since doses of about a millicurie have been said to produce adenomas of the thyroid in rats, a dose of 45 millicuries given to a mother whose thyroid had been largely removed might present a high blood concentration to the fetal thyroid before being almost completely excreted via the mother's urine. On the other hand, the thyroid follicles, although formed and containing some colloid by the fourth fetal month, would probably not show much  $I^{131}$  uptake yet. I know of no reports on any damaging effect to fetal thyroid tissue.

Dr. Robinson: It must also be remembered that the removal of this much thyroid will necessitate the administration of thyroid extract postoperatively. Don't forget also that the parathyroids are often removed with a total thyroid specimen, so signs of tetany must be watched for very carefully in the first week or so. I'll never forget the first thyroid I ever removed. I came in the next morning and found the patient with her hands and feet clenched and drawn up in tetanic contracture, and I was pretty upset about it. I questioned her, since I didn't think I could be that far off, and she said that every spring and fall she had attacks just the same way. I think she was one of those rare people who have idiopathic hypocalcemia of parathyroid origin.

I think it ought to be impressed upon the people at this conference that this is the type of neoplasm that smoulders, and if one can get rid of even rather extensive metastases once they have occurred, he can expect the patient to have quite a fair survival period. Sometimes this neoplasm occurs in the very young, four- or five-year-old children, yet even when it has invaded the mediastinal nodes and these are removed, the prognosis is still pretty good.

Dr. Helwig: Yes. Thyroid surgery in these cases is quite effective. I noticed an article by George Crile<sup>8</sup> in which he reports that he removes any involved nodes and takes out the homolateral lobe. Then he waits for the rest of the nodes to pop up and takes them out one at a time; and I know that has been followed by a number of other surgeons. Because of the extremely slow growth and slow evolution of the tumor, he doesn't feel that he is jeopardizing the patient's future.

Let's have the last case, Dr. Brooker.

#### CASE NO. 53-52

Dr. Brooker: The third case is that of a 62-year-old white woman, admitted to the medical center for a progressively enlarging mass in the neck, with shortness of breath and difficulty in swallowing. She had had an enlarged thyroid for approximately 20 years without any treatment, and had experienced pain in the left shoulder and upper arm for 8 months prior to admission.

Physical examination showed this huge mass in the neck to be bilateral, but it was more extensive on the left. It was nodular, compressed the trachea,



Figure 2. Photograph of the patient before operation showing extensive involvement of the neck by the large, nodular tumor. Note the tortuosity of the dilated superficial veins over the upper sternum.



and extended into all triangles of the neck and beneath the sternum. Her radioactive iodine uptake was 9 per cent, and roentgenograms of the chest revealed calcification in the thyroid area. There were minimal signs of sympathetic and upper brachial cord involvement. The blood pressure was 140/70 and the pulse 82 per minute. Hemoglobin was 7.7 grams, and other laboratory studies were not contributory.

Five days after admission, an exploratory operation was performed, at which time much of the tumor was removed, but it was impossible to resect the whole tumor because of its wide local extension and gross invasion of large veins. A tracheotomy was done during surgery.

Postoperatively, radiation therapy was instituted and recovery was uneventful. The patient was dismissed with the tracheotomy tube in place.

Dr. Kittle: At the time of operation, we found that this large goiter involved almost every structure in the patient's neck with extensive invasion of the larynx and trachea from the thyroid cartilage down to the jugular notch, making it impossible to find any sort of a dissection plane. It was adherent to both of the carotid arteries and had invaded exten-

sively into the neck muscles. On the left side, the internal jugular vein contained large masses of the tumor tissue itself, so that in order to ligate the vessel it was actually necessary to grasp it and milk the tumor tissue down. I think that gives you perhaps the best idea about how invasive and extensive this tumor was. We had to excise as much of the tumor as possible, but admittedly there was still a fair amount of the tumor mass left. We elected to do a tracheotomy at the time of surgery because of the need for postoperative irradiation and the distortion of the trachea, and because past experience has shown that as these patients receive radiation a great deal of tracheal edema occurs. Postoperatively the patient did as well as could be expected, and she was referred to x-ray for further therapy.

Dr. Helwig: How much radiation have you given her, Dr. Litton?

Dr. Litton: She got a depth dose of 1,740 r. This was a large tumor, and to get a 1,740 r depth dose we had to give close to skin tolerance on each side, at least over 3,000 r.

Dr. Helwig: Dr. Boley, would you tell us about the pathology of this tumor?

Dr. Boley: I think there are two facts worthy of emphasis. One is that the total weight of the material removed was 330 gms. The veins were extensively involved by tumor so that they were somewhat like small sausages. Microscopically, the tumor was composed of large, uniform, acidophilic Hürthle cells, with some variation in the nuclei. We feel that it is a malignant Hürthle cell tumor.

Dr. Helwig: Did it produce any colloid at all?

Dr. Boley: No.

Dr. Helwig: It might be mentioned that this relatively noncolloid producing tumor will occasionally take up  $I^{131}$ . On the other hand, I don't believe any of them have been found which would take it up in therapeutic amounts.

Dr. Kittle: Certainly this is an excellent example of an individual who has had a goiter for a great many years and feels that there is nothing that needs to be done about it until the goiter attains such size that he has either dyspnea or dysphagia. Many such goiters may undergo malignant change, and this in itself is indication for advising patients to have these goiters excised. Another interesting thing is the type of tumor, the so-called Hürthle cell tumor. It is one of the more obscure types of thyroid carcinoma. In a series of some 112 cases<sup>9</sup> reviewed at Johns Hopkins University, only 6 instances of Hürthle cell tumor were found.

Since there is a great deal of dispute among pathologists about the malignancy of thyroid lesions, I'd like to ask whether they call a Hürthle cell tumor benign or malignant. I think the confusion may arise



Figure 3. Photomicrograph of the tumor to show its alveolar pattern and presence within a vein, the wall of which can be seen in the upper part of the photograph. Verhoeff-van Gieson, X 50.



because the Hürthle cell tumor does not tend to metastasize but is locally invasive. It is analogous to a basal cell tumor, which does not metastasize.

Dr. Helwig: I don't think we can overemphasize what Dr. Kittle says. In a series at the Lahey Clinic,<sup>10</sup> of 1,971 solitary adenomas of the thyroid gland, there were 10 per cent malignant tumors. That is a high percentage, since in diffuse goiters it runs not over 0.6 per cent. Thus there's a 10 per cent chance of adenomas becoming malignant, and I think we can say, therefore, that solitary adenoma of the thyroid gland is a lesion which should always be taken out. In my own material, I think at least 80 to 85 per cent of all cancers of the thyroid that I have seen in the past 30 years have started as solitary adenomas. How do you feel about that, Dr. Robinson? Am I being a little too sanguine?

Dr. Robinson: No, I think you're right. I have been thinking, as you were talking, about how one should manage a thyroid that clinically has a single nodule. At the time of surgery one often finds 4 to 10 other nodules in the thyroid which could not be felt from the outside, but which are there and have the same malignant potentiality as the bigger one. Therefore, I think one has to do a thorough exploration of both lobes of the thyroid and not just do a minimal exposure.

Dr. Helwig: I think we've got to differentiate between adenomas that are neoplastic and pseudo-adenomas of the thyroid. Now the ordinary colloid goiter may have hidden in it, it's quite true, a fetal adenoma, or whatever you want to call it, but the majority of them obviously are not neoplastic processes at all. If you've got a big nodular goiter, it ought to come out anyway, but if you've got just one solitary nodule in an otherwise normal gland, I certainly think you're justified in removing that nodule.

Dr. Kittle: Dr. Helwig, do you find some of these glands with two or three discrete adenomas?

Dr. Helwig: Yes, we do, we surely do; but that's a nodular goiter, and such goiters should come out.

I should like to comment on the possible side effects of radioiodine. Aside from the salutary myxedema and occasional castration effect, you may get a pancytopenia; there have been deaths from pancytopenia from too large doses of I<sup>131</sup>. There has been loss of hair over the areas of metastasis where the I<sup>131</sup> has concentrated, particularly if they are in the skull. However, this is a minor affair in someone with bony or soft tissue metastases.

Dr. Robinson: What is the half-life of radioiodine?

Dr. Helwig: Eight days, and it's practically all (about 99 per cent) gone in 53 days.

Another point I think important is, don't be spill-

ing that urine around indiscriminately because of the very high concentration of iodine that we know is constantly emitting beta and gamma radiations. Measurements of radioactivity in the urine are necessary in order to calculate the amount of uptake by the body, but be careful in handling the urine; someone might get a little overdose from fooling with it. It's pretty active, because practically all of the radioactive iodine is excreted through the kidney.

Dr. Robinson: For how many years now have we been using radioactive iodine?

Dr. Bly: There was a small amount produced by Fermi in 1938. There were minute quantities available until the war, when the A.E.C. piles produced it in large quantity. Hertz<sup>11</sup> used radioactive iodine in animals in 1938 and reported its use in 10 hyperthyroid patients in 1942.

Dr. Robinson: It's been only 5 to 7 years since anyone has had very much of this to give, and that's hardly long enough to see whether there are any neoplastic potentialities. This is something for which we must be on the lookout.

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#### ACADEMIC PROMOTIONS AT K.U.

The following promotions in academic rank have been announced for the University of Kansas School of Medicine by Chancellor Franklin D. Murphy:

To professor: Dr. E. Grey Dimond, medicine (chairman).

To associate professor: Dr. Jesse D. Rising, medicine; Dr. Leland D. Stoddard, pathology; Dr. H. I. Firminger, pathology; Dr. William P. Williamson, surgery; Dr. James O. Boley, pathology.

To assistant professor: Dr. Franklin Behrle, pediatrics; Dr. Sigmund Gundle, psychiatry; Dr. Frederick Kittle, surgery; Dr. Charles E. Brackett, surgery.

To associate: Dr. Frederick Speer, pediatrics; Dr. J. E. McConchie, radiology; Dr. Doris Kubin, radiology.

## ACTIVITIES OF MEMBERS

Dr. Edward X. Crowley and Dr. Norman C. Siebert, Wichita, recently became diplomates of the American Board of Obstetrics and Gynecology.

Dr. Ronald McCoy, Coldwater, announces that Dr. Robert E. Bodmer is now associated with him in practice.

Dr. Delbert V. Preheim, who formerly practiced in Moundridge, has become a member of the staff of the Bethel Clinic, Newton, and is specializing in internal medicine.

The Eddy Clinic, Hays, announces that Dr. Harry R. Custer, surgeon, is now a member of its staff. Dr. Custer, a graduate of the College of Medicine of Ohio State University in 1948, comes to Kansas from Columbus, Ohio, where he was senior resident of the department of surgery, Ohio State Medical Center, chief resident of the department of pediatric surgery at the center, and resident surgeon at St. Francis Hospital, Columbus.

Dr. George W. Cowles and Dr. Edward X. Crowley, Wichita, announce that Dr. Grant E. Evans is now associated with them in practice.

Dr. Ralph B. Earp, who began practice in 1897, last month announced his retirement from active practice in El Dorado.

Dr. Mahlon H. Delp, assistant dean in charge of postgraduate affairs and professor of medicine at the University of Kansas School of Medicine, was named as the faculty member most devoted to his primary objective as a teacher by the senior class of 1953. With that distinction he became winner of the Jayhawker Award, offered by the *Jayhawker M.D.*, yearbook.

Dr. Howard R. Wagenblast, Lawrence, resigned last month as director of the Lawrence-Douglas County Health Department to enter the U. S. Public Health Service. He will be stationed at Denver as a senior assistant surgeon. Dr. Byron W. Walters, who formerly practiced in Marquette and has been in

Lawrence since last fall, has accepted an appointment as temporary director of the health department.

Dr. Robert C. McClymonds, Walton, who completed 50 years of practice there on August 9, was honored by the community on his anniversary with an open house celebration. Feature stories about him were published in the *Kansas City Times*, the *Wichita Eagle*, and other newspapers.

Dr. Jane W. Tillinghast, associate in psychiatry at the University of Kansas School of Medicine, has begun direction of a psychiatric outpatient clinic at the medical center.

Dr. Charles H. Johnson has closed his office in Osawatomie and has moved to Mission where he is associated with the Johnson Clinic. He had been practicing in Osawatomie since 1946.

The Bradley-Waldorf clinic, Greensburg, announces that Dr. Frank C. Brosius is now a member of its staff. Dr. M. H. Waldorf, one of the partners at the clinic, is now serving in the Air Force.

Dr. A. N. Lemoine, Jr., chairman of the department of ophthalmology at the University of Kansas Medical Center, presented a paper, "Diabetic Changes of the Eye," before a recent meeting of the Washington University School of Medicine staff in St. Louis.

Dr. Lafe W. Bauer, Dr. Dennis A. Hardman, and Dr. Robert G. Sheppard, Smith Center, announce that Dr. Hugh J. Woods, a graduate of the University of Kansas School of Medicine, is now associated with them in practice.

Dr. LaRue W. Owen, Wichita, began a residency at the University of Kansas Medical Center on July 1.

Dr. D. W. Robinson, chairman of the section on plastic surgery at the University of Kansas Medical Center, is attending a meeting of the International Society of Surgeons in Lisbon, Portugal, this month. On October 6 he will address a meeting of plastic surgeons in Stoke, England.

Dr. Ralph R. Preston was recently released from



service with the Navy and has returned to his practice in Topeka in association with Dr. H. W. Powers. During his Navy duty, Dr. Preston was stationed in Washington, D. C.

Dr. R. L. Newman, associate professor of obstetrics and gynecology at the University of Kansas Medical Center, presented a paper, "Cancer of the Ovary," at a recent meeting of the American Academy of Obstetrics and Gynecology in Little Rock, Arkansas.

Dr. Charles M. Newman, Axtell, announces that Dr. W. R. Miller, formerly of Sterling, Nebraska, is now associated with him in practice. Dr. Miller practiced in Summerfield, Kansas, from 1919 to 1925, and later spent four years with the U. S. Public Health Service in Alaska.

Dr. William H. Crouch, Topeka, was guest speaker at a recent meeting of the West Topeka Kiwanis Club.

Dr. A. H. Dyck, McPherson, was elected to fill the unexpired term of Dr. Orville Walters as secretary of the McPherson County Medical Society at a meeting held last month. Dr. Walters was granted a two-year leave of absence to serve on the staff of Winter Veterans Administration Hospital, Topeka.

Dr. Ernest M. Seydell, Wichita, announces that Dr. Joseph A. Budetti is now associated with him in the practice of otolaryngology. For the past two and one-half years Dr. Budetti was chief of the ear, nose, and throat section of Tokyo Army Hospital and consultant otolaryngologist for the Far East Command. Prior to the Korean War he practiced in New Rochelle, New York.

Dr. Fred J. McEwen, Wichita, is the author of a paper, "Cardiac Arrhythmias and their Management," which was published in the *Mississippi Doctor* for July. The paper was presented at a meeting of the Mid-South Postgraduate Medical Assembly in Memphis in February.

Dr. R. A. J. Shelley, Coldwater, is one of 93 physicians who will be honored by the University of Tennessee at exercises scheduled for September 28. Dr. Shelley, who received his medical degree there in 1903, is receiving recognition for his services to his community during the past 50 years.

## KANSAS CITY SOUTHWEST CLINICAL SOCIETY

The annual scientific program of the Kansas City Southwest Clinical Society will be presented at the Municipal Auditorium, Kansas City, Missouri, September 28 through October 1. A list of the guest speakers who will take part may be found in an advertisement on Page V of this issue.

In addition to lectures before the general assemblies, the guests will participate in a panel discussion as the closing feature of each day's session, except on September 29 when the session will close with a clinico-pathologic conference.

Color television programs, medical and surgical, will open the morning sessions from September 29 through October 1. This program has been arranged through the courtesy of Smith, Kline and French Laboratories. Two cameras projected on two large screens will afford adequate vision for an audience of 500 persons.

The entertainment will include a dinner, floor show, and dance in the Grand Ballroom of the Muehlebach Hotel on September 29.

## GRANT TO MEDICAL CENTER

A grant of \$25,115.50 to the University of Kansas School of Medicine was announced recently by E. Sloan Colt, president of the National Fund for Medical Education. That amount is part of a total of \$1,944,151.64 distributed among 79 medical and basic science schools in the United States.

The purpose of the awards is to "strengthen medical school teaching standards" through provision of funds to pay teaching salaries, create new faculty posts, and initiate teaching experiments, the announcement reported. In 1951 the Kansas school received \$15,000 from the fund; in 1952, \$21,970.

The fund is built up through contributions from corporations—through the fund's industry committee—and the medical profession.

## DEATH NOTICES

WILLIAM REDMON FRISBEY, M.D.

Dr. William R. Frisbey, 80, an honorary member of the Shawnee County Medical Society, died on July 28 at the home of his daughter in Des Moines. He had retired from the active practice of medicine in Delia some time ago. Dr. Frisbey was graduated from Kansas Medical College, Topeka, in 1903, and began practice in Delia shortly afterward.

# OBSTETRICAL SOCIETY MEETING

The Kansas State Obstetrical Society, which has just completed its first year and has a membership of 148 physicians, will meet at the University of Kansas Medical Center, Kansas City, on November 9, 10, and 11 in conjunction with the postgraduate course in obstetrics and gynecology being offered there. A second meeting of the group will be held in Junction City at a date to be announced later, and a third meeting will be held in Topeka at the time of the annual meeting of the Kansas Medical Society next May.

Membership is open to all physicians interested in lowering the number of fetal and maternal deaths in the state. One phase of plans to carry out that objective is the careful analysis of such deaths.

Dr. Robert H. Maxwell, Wichita, is president of the organization, and Dr. Robert M. Carr, Junction City, is secretary-treasurer.

## BLUE SHIELD

### FEE SURVEY

A state wide fee survey just completed has resulted in agreement by the Blue Shield Fee Committee of the Kansas Medical Society on a set of relative charges for the most frequent procedures paid for by Blue Shield. In other words the committee has established a scale against which to measure the level of Blue Shield payments. For example, the survey showed an average charge over the state of \$137 for an appendectomy. The Blue Shield payment of \$100 for an appendectomy is therefore 73 per cent of the average charge.

Using a level of from 65 to 75 per cent, the committee has made recommendations for minor adjustments both up and down in Blue Shield's payment for certain of these frequent procedures. It is the intention of the committee to continue studying physicians' charges and to continue to recommend adjustments in Blue Shield as changes occur in the practice of medicine and in average charges.

It is believed by the committee that this is the most accurate study that has been developed so far. The entire membership of the Kansas Medical Society received a questionnaire regarding the charges made for certain surgical procedures, for non-surgical treatment, for x-ray, and for anesthesia services. Each physician was asked to list his charge for these procedures and to estimate the number of times the procedures were done in a 12-month period. When the first questionnaire was not returned in as large numbers as desired, a second one was sent out with exactly the same questions. Five hundred sixty-eight question-

naires were returned properly completed so that they could be used.

Five subcommittees of the fee committee were appointed to prepare average charges in each of five counties. This was done to provide a way of judging the accuracy of the charges developed by the survey. When the fee committee met on August 2, the results of the survey were thoroughly discussed and evaluated. Also discussed was the report that some physicians are using a patient's Blue Shield membership as an excuse to make a double charge. It is believed that this is not a condition which is prevalent in Kansas.

The accompanying table shows the charges made over the state for the 34 most frequent procedures paid for by Blue Shield. It is being reproduced on these pages to inform Kansas physicians of the interesting results of the survey.

<i>Procedure</i>	<i>Weighted Average Charge</i>
Anesthesia (Minor)	\$ 12
Anesthesia (Major)	28
Cataract Removal	212
Strabismus	144
T. & A. (under 12)	42
Submucous Resection	97
Appendectomy	137
Hemorrhoidectomy (Internal)	81
Hernioplasty (Single)	113
Cholecystectomy	190
Thyroidectomy (Sub-total)	178
Pilonidal Cyst or Sinus	80
Breast (Simple Removal)	94
Radical Mastectomy	200
Ligation (Saphenous—High)	72
Dilatation and Curettage	42
Hysterectomy (Supravaginal)	182
Ovariectomy	140
Cystocele and Rectocele	123
Medical Hospital Visits	4
Delivery Only	57
Delivery and Prenatal Care	87
Cesarean Section	176
Colles' Fracture	53
Fracture, Humerus	81
Fracture, Tibia	93
Tenorrhaphy	48
Removal Semi-lunar Cartilage of Knee	140
X-ray of Pelvis	12
X-ray of Humerus	10
X-ray of Spine	29
X-ray Therapy—Cancer of Cervix	233
Prostatectomy (Suprapubic)	208
Nephrectomy	225

A recent issue of the *Cancer Bulletin* reported the results of showing the film, "Breast Self-Examination," to 1,280 Iowa women, all over 35 years of age. After seeing the film, 120 women made appointments for complete physical examinations. Thirty-two had suspicious lumps, and biopsies from those proved that six women had breast cancer. This represents a diagnostic yield of five per cent.



# Moniliasis: A Complication of Antibiotic Therapy\*

Marilyn K. Hutchison, M.D.,\*\*

Kansas City, Missouri

Since the advent of penicillin and the later antibiotics, toxic side effects continue to be reported as experience with these valuable therapeutic drugs gradually accumulates. These adverse effects vary in severity from a mild penicillin-induced urticaria to the fatal aplastic anemia which has been widely reported during the past year as a sequel to chloramphenicol therapy. One complication of the antibiotics, however, has received little emphasis—the occurrence of moniliasis.

Moniliasis is a fungus disease, caused by the yeast-like species of *Candida* (*Monilia*), usually *C. albicans*. In the most frequently encountered oropharyngeal, cutaneous, and vaginal forms, monilial infections tend to follow a benign course. Since these forms present an annoying but rarely difficult therapeutic problem, the physician may fail to recall that the fungus may also produce lesions of the bronchi or lungs and the more serious conditions of septicemia, endocarditis, and meningitis. It is with regard to these latter conditions that the appearance of moniliasis during or following antibiotic therapy gains clinical importance.

Much has been written about the sensitivity of various types of bacteria to the different antibiotics, and considerable concern has been expressed over "resistant" strains which constituted, in each individual case, a therapeutic failure. It appears that the full picture has not been generally appreciated. Lipman, Coss and Boots<sup>38</sup> showed in 1948 that when penicillin was administered for prolonged periods of time to normal subjects, the result was a replacement of the predominantly gram-positive flora of the throat by gram-negative bacteria. Barach<sup>3</sup> noted that the use of antibiotics to effect simultaneous eradication of gram-negative and gram-positive bacteria results in some cases in invasion with such highly resistant organisms as *B. proteus* and *C. albicans*.

It is this sort of change which the ecologists describe as a disturbance or upset in the balance of nature. Confirming the existence of such biologic imbalance is not always an easy matter. The exact etiologic significance of *Candida albicans* in any disease is difficult to establish since it may be found in the mouth,<sup>32</sup> the intestinal tract,<sup>59</sup> or the vagina in 35-40 per cent of normal people,<sup>10</sup> and as a secondary contaminant in other recognized diseases.<sup>60</sup> It is obvious,

therefore, that most infections have an endogenous source and the determination of the primary source of infection is often a difficult problem, particularly since such a source may have existed for some time but was held in check by other flora, as will be discussed later.

The occurrence of moniliasis as a result of antibiotic therapy has been noted and reported in several foreign countries as well as in the United States, as the fungus *Candida*, unlike many other mycoses,<sup>9</sup> has a world-wide distribution. As will be seen, all forms of the disease have been observed.

*Cutaneous:* Infections of the skin, particularly of the intertriginous areas (axillae, inframammary, inguinal, intergluteal, interdigital webs of the hands and feet) are not uncommon and are usually the result of autoinoculation from the mouth or gastrointestinal tract. Gewin<sup>19</sup> in 1951 reported on a case of staphylococcic endocarditis in which oral and skin lesions appeared during aureomycin and chloramphenicol therapy, and which he attributed to induced deficiency of the vitamin-B-complex. Hall<sup>21</sup> and Leitner<sup>37</sup> drew similar conclusions. However, Tomaszewski<sup>64</sup> found that such lesions appeared despite vitamin treatment, and in many patients *Candida* was found to have replaced the bacterial flora.

The typical cutaneous form of moniliasis described by Hauser<sup>24</sup> as monilial granuloma begins in childhood, often with oral thrush, and ultimately involves the oral mucosa, fingernails, and paronychia<sup>52</sup> and the skin of face and scalp. Lesions consist of chronic, intractable granulomas, which on the skin are often surmounted with cutaneous horns. In four of the cases followed by Hauser for several years, death occurred in all before the 20th year of life.

Reiches<sup>56</sup> found that genitocrural dermatitis developed frequently in both sexes during and after therapy with aureomycin, chloramphenicol, and terramycin, and that diarrhea was not an essential factor in causing the pruritus. He also concluded that although normal persons may harbor monilia asymptotically, the appearance of symptoms (itching, burning, dermatitis) indicates the actual invasion of the skin or mucous membrane.

*Vaginal:* Monilial vaginitis is perhaps the most common of all forms of moniliasis, particularly in pregnancy, in postmenopausal women, and in diabetics, the carbohydrate-rich environment in these groups cited as enhancing the growth of the fungus.<sup>49</sup>

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\* Now interning at Menorah Hospital, Kansas City, Missouri.

Harris<sup>23</sup> reports encountering lesions of the oral, vaginal, vulval, and perianal regions as frequent side effects in the treatment of brucellosis with aureomycin and chloramphenicol. When cultures of the vaginal and vulval exudates were made, *C. albicans* was obtained. These lesions responded to fungicidal treatment.

*Gastrointestinal:* Oropharyngeal moniliasis (thrush) occurs most frequently in infants and elderly people with wasting diseases, such as tuberculosis and cancer. As early as 1839, Langenbeck<sup>9</sup> demonstrated in thrush the presence of a yeast-like budding fungus. The "black hairy tongue" of monilial stomatitis has been described often, for the most part following the use of penicillin pastilles (troches) as by Lahiri<sup>35</sup> in 1947 and Wolfson<sup>68</sup> in 1949. Florey<sup>13</sup> states that despite some favorable results claimed for penicillin in the treatment of moniliasis, he has observed *C. albicans* to be cultured from several chronic sinuses during daily instillation of penicillin after the original pathogens had disappeared. Hewitt<sup>25</sup> reported the development of a dark brown discoloration of the tongue in six patients treated with chloramphenicol, and isolated *C. albicans* in cultures of three of these. Lighterman<sup>36</sup> also noted an increasing incidence of oral moniliasis in patients receiving aureomycin, as did Pappenfort and Schnall.<sup>53</sup>

Woods<sup>69</sup> reports on a group of 20 patients among those regularly encountered with sore mouth, hairy tongue, perliche, or the clinical picture of thrush, resulting from the local use of penicillin or aureomycin (as sprays, troches, soluble tablets, or powders) in the oropharynx. These preparations have been widely prescribed to patients by physicians and druggists, and the reactions produced by their use have been so frequent as to cause many physicians to discontinue this form of therapy.

Intestinal disturbances have been frequently observed by numerous physicians during antibiotic therapy, notably with aureomycin, but relatively few have attempted an investigation of the cause. Woods<sup>69</sup> described the presenting complaint as being usually a mild persistent diarrhea, the stools occasionally containing mucus and rarely blood. He observed this symptom complex in one patient following prolonged penicillin therapy, in one patient following administration of aureomycin for a respiratory infection, and in another patient who had received both drugs. In these patients and in three others who were asymptomatic, *Candida albicans* was found to be the predominating organism, and its growth was significantly heavy.

Bierman<sup>5</sup> reports on two children and two adults who were given aureomycin or chloramphenicol, or both, for periods of from 29 to 96 days. Yeast-like organisms were found in stools during therapy, but normal flora returned in 48 hours after the drugs

were discontinued. Merliss<sup>44</sup> has observed steatorrhea following the use of antibiotics. Beck<sup>4</sup> and Jacob<sup>22</sup> have commented on the changing intestinal flora following antibiotics, while Kligman<sup>33</sup> is among the few who maintain that increased monilial incidence cannot be correlated with intensive antibiotic administration.

*Respiratory:* Bronchial moniliasis is not uncommon. A particular type of infection occurs in the tea-tasters of Ceylon<sup>9</sup> and was described in detail by Castellani in 1905. In bronchial moniliasis, the physical signs are those of bronchitis with medium and coarse rales<sup>50</sup> at the bases of the lungs. Moore<sup>46</sup> has described a case in which *Candida albicans* was isolated from the sputum of the patient following oral aureomycin. Golden yellow crystals considered to be an altered form of aureomycin were found in the center of each colony. Aureomycin crystals when placed on plates seeded with *C. albicans* tend to inhibit the organism's growth. However, dilute aureomycin had a stimulatory effect on the fungus.

Pulmonary moniliasis is not as common as the bronchial form, but is a more serious disease. The temperature and pulse are elevated moderately, pleural pain is common, and effusion occurs occasionally. Harassing cough produces mucoid gelatinous sputum which sometimes is blood streaked. It has been shown that following administration, aureomycin diffuses into the pleural cavity as well as into the bile,<sup>63</sup> and recently Wolff<sup>67</sup> has described the occurrence of monilial pneumonia following aureomycin therapy. Biopsies of the case reported a decade ago by Miale<sup>45</sup> showed in H and E stain a granulomatous lesion and tubercle formation with giant cells and epithelioid cells, which led to a diagnosis of tuberculosis. At autopsy, the true nature of the disease was determined, and re-examination of the biopsy material using Gram's stain showed typical fungus elements in the deep tissues and in the areas of caseation. The cause of death was monilial meningitis.

A similar case is reported by Abrams.<sup>1</sup> *Candida* asthma has also been observed subsequent to aerosol penicillin administration.<sup>31</sup> Ormerod and Friedman<sup>51</sup> have written up a case of oropharyngeal moniliasis, resulting from extensive penicillin treatment of a cold, which spread to the bronchi with extensive ulceration of the oral cavity, upper respiratory tract, and right main bronchus.

In April, 1951, the Council on Pharmacy and Chemistry of the American Medical Association decided that a warning statement should be added to the label of chloramphenicol, aureomycin, and terramycin. This report of the council pointed out that the overgrowth of monilia and other yeast-like organisms following the administration of antibiotics occurs most frequently in the large bowel and is of slight importance; however, it emphasized that deaths



from pulmonary moniliasis can occur following therapy with these new preparations.

*Systemic:* The principal significance of many of the above cases lies in the fact that they may serve as a portal of infection which may lead to systemic invasion of the body by the fungus. This may occur as visceral involvement, endocarditis, meningitis, or any combination of these.

The earliest recorded case of monilial meningitis is that of Smith and Sano<sup>62</sup> in 1933. A decade later, Miale wrote up the case previously mentioned in which an erroneous diagnosis of tuberculosis was made prior to autopsy, and in 1945 Morris<sup>47</sup> described a case of ependymitis and meningitis due to *Candida albicans*. It is of interest to note that both the latter two cases had as a primary source of infection a tooth extraction, a condition in which the antibiotics are commonly employed. Halpert<sup>22</sup> in 1946, Geiger<sup>18</sup> in 1947, and Parillo<sup>54</sup> in 1950 are others who have observed monilial meningitis, and Mosberg<sup>48</sup> described a case of generalized and cerebral moniliasis co-existing with torula meningo-encephalitis after therapy with penicillin and streptomycin.

Up to the present time, 15 cases of monilial endocarditis have been reported in the literature. Joachim and Polayes<sup>27</sup> appear to have written up the first such case (1940), followed by the report of a case by Sachs<sup>57</sup> in 1941. The following year Pasternack,<sup>55</sup> Zimmerman,<sup>70</sup> Wikler,<sup>65</sup> and Emmons<sup>12</sup> all reported cases. Geiger reported, in addition to the above case of endocarditis with meningitis, another case of endocarditis in 1947. More recently, Zimmerman, Wolfe,<sup>66</sup> and Kunstadter<sup>34</sup> have added cases to the literature.

The case cited by Sachs was identified only by blood culture; all the others were proved by positive blood cultures and autopsy. Geiger's cases and those reported subsequently were apparently caused or aggravated by antibiotic administration. The five earlier cases reported by Emmons were in drug addicts, and were presumed to be infected through the injecting needle. Endocarditis in Geiger's patient did not develop until after prolonged, intensive penicillin therapy.

The case reported by Kunstadter is of particular interest, being the first such case in an infant. This patient had chronic pulmonary disease of approximately six months duration, for which no specific causative factor could be determined. During repeated bouts of fever, sulfonamides were administered with only temporary abatement of the fever and no improvement in the pulmonary pathological condition. Then, after a bronchoscopy on the 32nd hospital day and the subsequent administration of penicillin, there appeared for the first time oral and mucocutaneous thrush. The thrush responded poorly to treatment, a

generalized maculopapular eruption developed, and the blood cultures became positive for *Candida* during the period of penicillin administration.

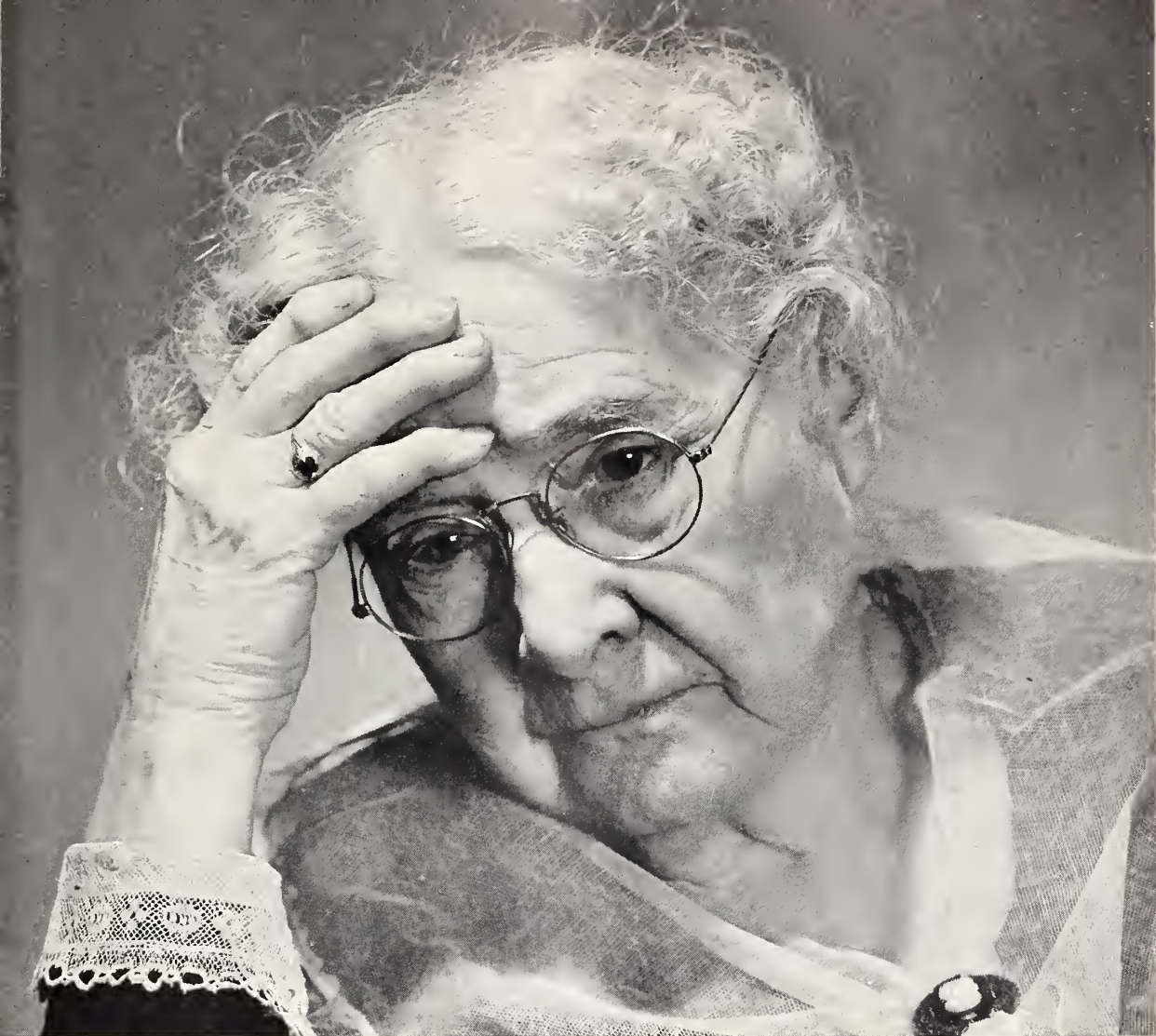
The autopsy findings described by Geiger are typical of those encountered in monilial endocarditis: "Loosely attached to the endocardium of the left auricle was a vegetation composed of a central core of red blood cells surrounded by a dense mass of closely packed blastospores and mycelial threads." Zimmerman mentions a "huge 2 x 5 cm. fungating vegetation involving two-thirds of the mitral valve."

Disseminated visceral involvement is no less serious. As a result of Zimmerman's first case of mycotic endocarditis,<sup>1</sup> secondary to a wound and apparently stimulated by constant administration of penicillin, and the subsequent report of a case in 1949 by Dr. Sidney Farber at the Children's Medical Center in Boston, a study of disseminated moniliasis, aspergillosis, and mucormycosis was carried out at the Armed Forces Institute of Pathology. Up to his last publication in 1950, Dr. Farber<sup>70</sup> has observed seven cases of disseminated moniliasis in children who were treated with various chemotherapeutic agents for other diseases. The majority of these children received both penicillin and aureomycin. In five, the original disease was leukemia, and in each of these cases the primary site of moniliasis was the esophagus or intestine. Most of them showed wide-spread fungus infection at autopsy.

Foley and Winter<sup>14</sup> in 1949 mention a case in which a postmortem diagnosis of generalized moniliasis was made in a patient who had received intensive penicillin therapy. Duhig<sup>11</sup> considered that monilemia with mycotic abscesses in the viscera forms a pathological entity and may or may not include oral and esophageal thrush. MacDonald<sup>42</sup> reported an unusual case of systemic moniliasis in which Addison's disease appeared to be due to *Candida albicans* involving the adrenals. He mentioned also another case in which a child who had had several courses of antibiotics was found at autopsy to have visceral invasion with *Candida*, including the liver and kidneys. Gausewitz<sup>16</sup> discussed the case of a 10-year-old boy with monilial infection of oral cavity and bronchi, resulting in fatal multiple involvement of the lungs, thyroid, kidney, and spleen and stated that prolonged treatment with penicillin and later with chloramphenicol was a significant factor in the wide dissemination of the lesions.

#### DIAGNOSIS

One of the greatest obstacles in making a diagnosis of moniliasis is the inadequate laboratory service available in most communities. This is due in large part to the former lack of emphasis on proper identification procedures for fungi. Culture tubes and plates are too often discarded at the end of 48 hours, be-



The inevitable restrictions of advancing years, the reduced activity and a lowered intake of bulk-producing foods all contribute to the high incidence of constipation in older persons.

## CONSTIPATION IN THE AGED

Constipation is almost a universal complaint of geriatric patients

Frequently, too, the protracted use of cathartics has left the colon in an atonic state and it is no longer capable of effecting a normal evacuation.

Metamucil has long been recommended for the treatment of constipation in the elderly. A highly refined vegetable product which is free from irritants, Metamucil effects a natural mechanical stimulus in the colon which helps the dysfunctioning muscles to regain and maintain their normal tone.

Metamucil may be safely prescribed for prolonged use without fear of dependence, intestinal irritations or allergic reactions.

Metamucil® is the highly refined mucilloid of *Plantago ovata* (50%), a seed of the psyllium group, combined with dextrose (50%) as a dispersing agent. It is accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

SEARLE *Research in the Service of Medicine*



fore most fungi appear, and there is a tendency among uninformed laboratory personnel to report occasional fungus forms as "contaminants" or "non-pathogens."<sup>70</sup>

*Candida albicans*<sup>20</sup> is an oval, budding, yeast-like fungus producing both blastospores and pseudomycelium in tissue and exudates, and in culture at room temperature and at 37° C. On blood agar, the colonies are a medium dull gray, while on Sabouraud's agar they have a creamy growth with a typical "brewery" or "yeasty" odor.<sup>7</sup> Cultures of torula have no odor. In sugar fermentation tubes<sup>28</sup> *Candida* produces acid and gas in glucose and in maltose, acid in sucrose, and neither in lactose.

At least five different genera of fungi may at times be easily confused with each other.<sup>70</sup> These are *Candida*, *aspergillus*, *mucor*, *cryptococcus* (torula) and *histoplasma*. *Cryptococcus neoformans* and *Histoplasma capsulatum* may be eliminated from consideration if mycelial structures<sup>2</sup> are demonstrable. Use of a new plasma extract and characteristic growth of monilia by this method is described by Fusillo.<sup>15</sup>

In pulmonary infection, the x-ray films may be of value. Films of patients with bronchial moniliasis<sup>9</sup> usually show little more than a non-specific type of peribronchial thickening. Sometimes a peculiar hazy type of linear fibrosis can be seen. Although such a picture is not diagnostic, Dr. Robert J. Reeves of Duke Hospital often suggests the possibility of moniliasis, and cultures frequently have confirmed his impression. The shadows seen in pulmonary moniliasis resemble those seen in bronchopneumonia, except that the edges of the lesions are less sharply defined. In addition, a positive skin test to *C. albicans* vaccine usually is present. Agglutinins may be present in the blood in dilutions varying from 1:80 to 1:2400, or they may be absent. The diagnosis can be made with a reasonable degree of certainty if there is consistent finding of large numbers of *Candida* in carefully collected fresh sputum.<sup>50</sup> A positive blood culture confirms a diagnosis of septicemia.

#### TREATMENT

Treatment is uniformly difficult and frequently unsatisfactory. However, the use of sodium caprylate has been reported by Cohen and Persky<sup>8</sup> in the treatment of thrush, and by Keeney<sup>31</sup> who used the aerosol form successfully in treating bronchial moniliasis. More recently, Kass, Sasano, and Klein<sup>30</sup> have reported the use of brilliant green, malachite green, and methylene blue dye inhalations with considerable success in bronchopulmonary infections, providing the fungus is first determined to be sensitive to the dye in vitro. Some interesting in vitro studies in sensitivity have also been made by McVay,<sup>41</sup> which reveal that the methyl and propyl esters of paraben (parahydroxybenzoic acid) are capa-

ble of preventing monilial overgrowth when administered with aureomycin.

#### DISCUSSION

Several theories have been advanced by various authors to explain the occurrence of monilial infections during or following antibiotics. These explanations generally appear to fall into one of the following groups: (a) the growth of *Candida* is directly stimulated by the antibiotic, (b) the growth of *Candida* is aided indirectly through suppression of bacteria and other organisms which compete for nutritive substances in the substrate, (c) the growth of *Candida* is enhanced by change in pH of the environment through alteration in bacterial flora, and (d) host tissue resistance is lowered as the result of vitamin deficiency or some other physiopathological change.


Pappenfort and Schnall<sup>53</sup> believe that aureomycin actually stimulates the growth of *Candida*, and that destruction of bacterial flora with decreased competition for available nutrients plays a secondary role. Moore<sup>46</sup> found that, although agar plates seeded with aureomycin crystals showed a tendency towards inhibition of the growth of *Candida*, dilute aureomycin had a stimulatory effect.

Campbell and Saslaw<sup>6</sup> also found that the growth of certain fungi was enhanced by streptomycin. Lipnik, Kligman and Strauss<sup>39</sup> carried out investigations to determine the role of *C. albicans* in the production of side reactions to antibiotics and concluded that the apparent enhancement of growth of *Candida* by antibiotics was actually due, not to the antibiotic itself, but to the inert phosphate content of the capsules.

Woods' studies seem to confirm those of Lipnik and associates that the antibiotics have no direct stimulating or suppressing effect on the rate of growth of *Candida*. He is of the opinion that suppression of bacterial flora co-existing with *C. albicans* and competing for nutrition in the same substrate is the most probable cause for monilial overgrowth and host infection. McClary<sup>40</sup> and Jacob<sup>26</sup> have carried out experiments which agree with such a conclusion. From clinical observations, Gewin,<sup>19</sup> Leitner,<sup>37</sup> Hall,<sup>21</sup> Reiches,<sup>56</sup> and Lighterman<sup>36</sup> support the view that decreased vitamin-B-complex synthesis by intestinal bacteria lowers the tissue resistance of the host.

Salvin<sup>58</sup> and Seligman<sup>61</sup> have done recent experimental work with mice which led to the same conclusions: that *Candida* suspensions are nonpathogenic and aureomycin solutions nontoxic when either of these alone is injected intraperitoneally into mice. The mixture of both is fatal. The virulence-enhancing activity of aureomycin is destroyed on standing at room temperature, or by boiling, a parallel to its antibiotic activity; the increased virulence was effected by lowering the host tissue resistance.

Their work is substantiated by that of Foley and



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2. Eisenstadt, W. S.: Journal Lancet 70:26, 1950.

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Winter,<sup>14</sup> who found that a single injection of penicillin on the chorioallantoic membrane of a 10-day-old chick embryo increased the mortality resulting from *Candida albicans* infection. A similar enhancing effect was observed in rabbits infected with this organism, treated with penicillin intramuscularly. On the basis of in vitro experiments, they suggest that metabolic stimulation of *Candida* by penicillin and an "increased production and release of toxins or antigens precipitating allergic phenomena similar to the Herxheimer reaction in syphilis may be related to the in-vivo effect of penicillin as well."

The effect of a change in pH on the growth of monilia has been studied by Karnaky,<sup>29</sup> who inoculated a pure culture of *Candida* in different groups of media which varied in pH from 3.9 to 10.82 and found that the organisms grew profusely and to the same extent on all of these. Clinical observations on 41 cases of monilial vulvovaginitis showed no effect on the growth of *Candida* from alteration of the pH. It appears, therefore, that this is not a significant factor.

#### SUMMARY

Among the many reported complications of antibiotic therapy, moniliasis has received little emphasis. In its most benign forms, oropharyngeal and vulvovaginal, this fungus infection is of little clinical significance. However, such mild infections may serve as a portal of entry for systemic invasion of the body, leading to the fatal manifestations of septicemia, endocarditis, meningitis, and generalized visceral involvement.

A search of the literature on this subject has revealed 32 recorded cases of fatal monilial dissemination: 15 cases were of endocarditis (including one with meningitis), 6 other cases of meningitis (one of which co-existed with torula), 1 case of pulmonary infection and 10 cases of visceral moniliasis. It is obvious that, in view of the enormous numbers of patients who have received treatment with the antibiotic agents, such serious complications are rare. The milder forms of moniliasis, however, have appeared with such frequency as side effects of antibiotic therapy that the physician prescribing such drugs should be aware that such apparently innocuous lesions may have fatal sequelae if systemic invasion should occur.

Several possible explanations for monilial overgrowth are given, the most likely cause being suppression of bacterial flora which normally are present with *Candida* competing for nutrition in the same substrate, an induced vitamin deficiency playing a secondary role, with a resultant lowering of the host tissue resistance.

The importance of considering the possibility of a fungus infection in all pulmonary and systemic infections of obscure origin is established.

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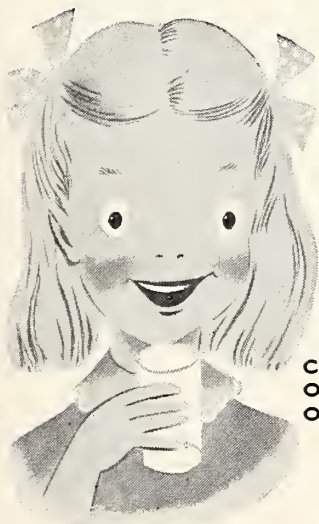
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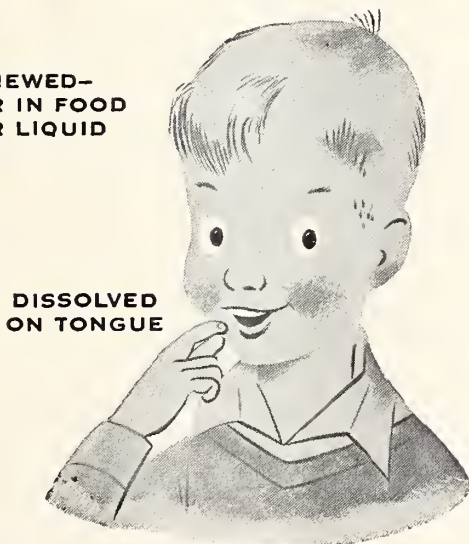
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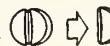


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totals reached a new high in 1951 and broke the record again in 1952.

The figures indicate that 58,000 more couples had a first child in 1951 than in 1950, supposedly a sequel to the marriage upswing that began in June, 1950, at the start of the Korean War. Births of second-born children increased by two per cent over 1950, of third children by nine per cent, and of fourth children by 13 per cent.

Marriages dropped in the last half of 1951, so it is likely that fewer couples had their first child in 1952. Since total births went up in that year, there probably was a further rise in births of second-born or later children.

## STUDY OF HOSPITAL PAYMENTS

An analysis of payments to hospitals was made recently by the Connecticut Hospital Association from a study of the records of 34 general hospitals in the state for the year ending September 30, 1952. Of particular interest was the fact that only 15 per cent of patient days in the hospital were paid for by the patients. Blue Cross absorbed the costs of 50 per cent of cases and 45.5 per cent of patient days. Commercial insurance carriers paid 24.5 per cent of total hospital charges in both categories. City and town welfare budgets were called on to meet costs for only 1.5 per cent of cases and 2.5 per cent of patient days.

Health education of the public . . . is often considered the responsibility of organized voluntary and official community agencies. Of course, it is also the physician's personal responsibility. He certainly should educate his patients and their families and do what he can as part of the community program. Health education methods have changed materially in recent years, with much greater emphasis on community organization and on helping the people to help themselves.—Hugh R. Leavell, M.D., *New England Journal of Medicine*, December 4, 1952.

## BIRTH RATE AT NEW HIGH

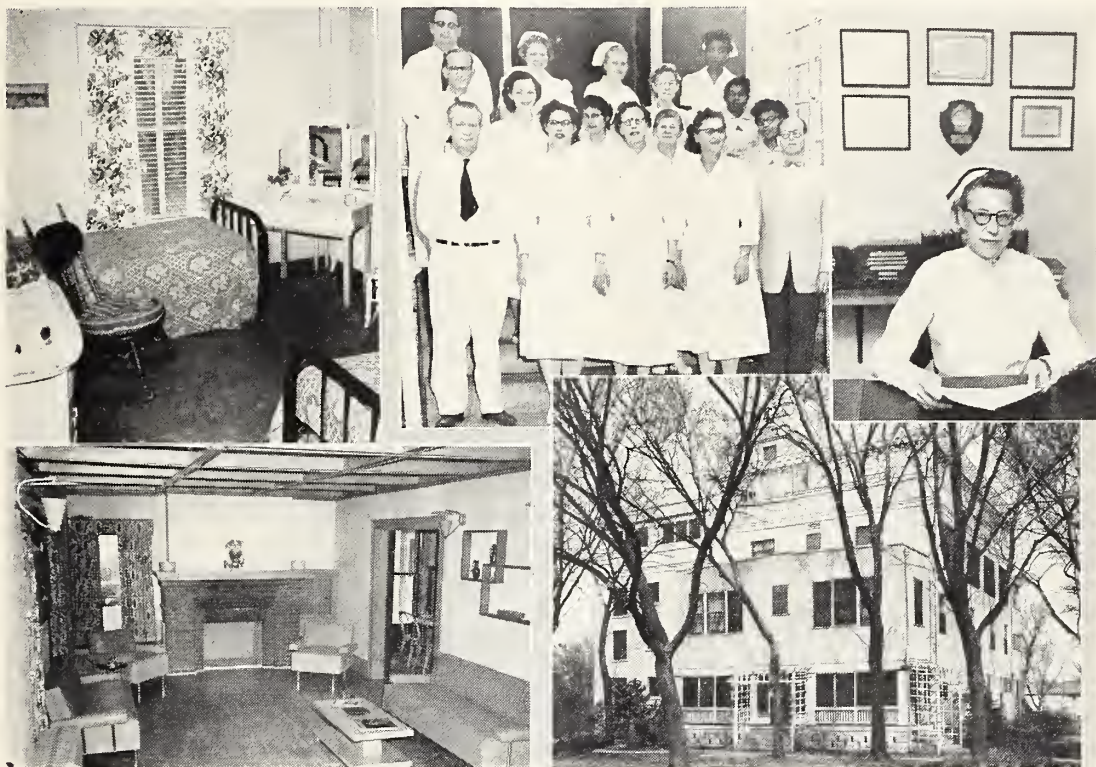
The national birth total continued to rise during the first three months of 1953, after setting a new annual record of 3,889,000 births in 1952, according to vital statistics estimates released last month by the Public Health Service.

Births during the first quarter of 1953 were running about 29,000 ahead of the same period last year, an increase of three per cent. March was the 10th consecutive month in which the estimated total births topped corresponding monthly figures for the previous year. The level of births for the first three months is at an annual rate of 25 live births per 1,000 population.

Since the end of World War II, more children have been born every year than in any wartime or prewar year. From 2,858,000 births in 1945, the total soared to 3,817,000 in 1947. After dropping to a slightly lower level for the next three years, birth

The death rate tells only part of the story, that there is still in every community a great reservoir of known and unknown cases of tuberculosis, and that it causes more deaths than any other disease in the age group 15 to 34. Everything points to the need for stepping up the program of case finding throughout the nation and to the need for greatly increased facilities for care of tuberculous persons, but there are now definite signs that the battle against the disease is reaching its final stages.—Arthur C. Christie, M.D., *Journal of American Medical Association*, January 10, 1953.

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## ANNOUNCEMENTS

The 18th annual meeting of the Mississippi Valley Medical Society will be held at the Elk's Club, Springfield, Illinois, September 23-25. The 10th annual meeting of the American Medical Writers' Association will be held at the same place on September 23.

The scientific meeting will feature 41 speakers in a session planned especially for general practitioners and will include a symposium on diabetes, a clinicopathologic conference, and a panel on "What's New in Medicine and Surgery." The evening program on September 24 will feature an address by Assistant Secretary of Defense (Health and Medical) Dr. Melvin A. Casberg, formerly dean of St. Louis University. There will be no registration fee.

Thirteen speakers will take part in the meeting for medical writers. It, too, will be offered without charge.

Complete details of both programs may be secured from Harold Swanberg, M.D., W.C.U. Building, Quincy, Illinois.

The Mid-Continent Psychiatric Association, a district branch of the American Psychiatric Association, will meet at the Hotel President, Kansas City, Missouri, on September 26 and 27. In addition to a number of local and district essayists, the following speakers will take part: Dr. Kenneth E. Appel of Philadelphia, president of the American Psychiatric Association; Dr. Daniel Blain, Washington, medical director of the American Psychiatric Association; Dr. Lloyd J. Thompson, Winston-Salem, professor of psychiatry at Bowman Gray School of Medicine; Dr. John R. Peters, Los Angeles, from the department of psychiatry at Los Angeles County General Hospital, and Dr. Neville Murray of Galveston, from the department of neurology and psychiatry, University of Texas Medical School.

Leading authorities on tuberculosis from this country and abroad will appear on the program of the Mississippi Valley Trudeau Society and the Mississippi Valley Conference which will be held at the Nicollet Hotel, Minneapolis, October 15-17. Heading the list is Dr. D. G. Madigan, Kent, England, who will discuss "Old Tuberculin and Bacillary Emulsions Under Chemotherapeutics Cover in Treatment of Tuberculosis." Sixteen other well known speakers will also take part.

A feature of the meeting, on October 15, is the annual dinner of the Minnesota Tuberculosis and Health Association, which will include a presentation

of the popular Minnesota television program, "The Doctors' Round Table."

The Colorado Heart Association, the University of Colorado School of Medicine, Fitzsimons Army Hospital, and the Colorado Department of Public Health are sponsoring a postgraduate conference on "Clinical Electrocardiography and Recent Advances in Cardiovascular Diseases" during the week of November 9-14, in Denver.

The first three days, for which there is no registration fee, will be devoted to clinical electrocardiography at Fitzsimons Army Hospital. The last two and one-half days will cover the second portion of the program, with a registration fee of \$15 for out-of-state physicians. This program will be presented at the Cosmopolitan Hotel.

Requests for further information may be addressed to Col. Edwin M. Goyette, M.C., Fitzsimons Army Hospital, Denver, or to the Colorado Heart Association, 314-14th Street, Denver.

The trustees of the Caleb Fiske Fund of the Rhode Island Medical Society announce as the subject for this year's prize dissertation "Recent Advances in Cardiac Surgery." A cash prize of \$250 is offered for the best essay of not more than 10,000 words. Complete information may be secured from the secretary of the fund, Rhode Island Medical Society, 106 Francis Street, Providence 3, Rhode Island.

The American College of Chest Physicians announces that three awards will be given annually to medical students who contribute the best essays on subjects relating to the diagnosis and treatment of chest disease. The first prize will consist of a cash award of \$250 and a certificate of merit. Details of the contest may be secured from the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois. Entries must be received at that address no later than March 15, 1954.

The fifth annual meeting of the Southwestern Surgical Congress will be held at Salt Lake City, September 21 through 23. Members may attend without charge, and non-members will be assessed a registration fee of \$10. The vice-president of the organization is a Kansan, Dr. Howard E. Snyder, Winfield.

Kansans taking part in the session are as follows: Dr. Orville R. Clark, Topeka, a councilor, who will preside at one of the sessions; Dr. Thomas G. Orr, Kansas City, who will serve as moderator at

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a panel discussion on diseases of the colon; Dr. Paul W. Schafer, chairman of the department of surgery at the University of Kansas Medical Center, who will present motion pictures, and Dr. Paul H. Lorhan, of the department of anesthesiology at the University of Kansas, who will present a paper, "Preliminary Report on Hypotensive Anesthesia," written by himself and Dr. Max I. Miller.

The 39th Clinical Congress of the American College of Surgeons will be held October 5 to 9 in Chicago, with headquarters at the Conrad Hilton Hotel. In addition to the program which will include 190 papers, surgery will be telecast from Billings Hospital. More than 11,000 surgeons are expected to attend.

#### STANDARDS FOR MEDICAL RECORD LIBRARIANS

A plan to provide more educational facilities for medical record librarians was given temporary approval by the House of Delegates of the A.M.A. at its June meeting, to make possible the establishment of new schools in September of this year. The original essentials for the training of such librarians were established in 1943 by the Council on Medical Education and Hospitals, in co-operation with the American Association of Medical Record Librarians.

The new plan provides for training high school graduates through nine months of instruction in anatomy, medical terminology, secretarial practice, and medical record procedures. Courses may be conducted by general hospitals having a minimum of 4,000 annual admissions, adequate teaching material, and personnel. At present there are 24 schools approved for training librarians who receive one year of hospital training after completion of two years of college or graduation from an accredited school of nursing.

Applications for approval of schools under the new program are to be submitted to the Council on Medical Education and Hospitals, 535 North Dearborn Street, Chicago.

The following quotations were taken from an address given by Emerson P. Schmidt, director of economic research, United States Chamber of Commerce:

"If, over the last quarter of a century, the individual had been as eager for de luxe medicine as he has been for some of the other items mentioned, we would at present have an abundance of medical practitioners and facilities, just as in the case of automobiles. Our economy would have provided medical

care just as it has provided an enormous increase in our beauty care personnel and facilities.

"If we had kept the automobile very low on the priority list of our desires, and suddenly raised its priority, we should have to wait some time before the necessary technical preparations for abundant cars were made. This is true also in medical care. . . .

"Perhaps a basic distinction is that the normal person continuously wants the various items mentioned. . . . Furthermore, he cheerfully pays for them. He buys a \$2,500 automobile on the installment plan because he wants it. But a \$2,500 operation he may regard as a violation of social justice. It is true that he buys an automobile according to a plan, whereas an expensive operation may hit him unexpectedly. . . .

"If provision for hospitals and various health services were given a top priority, it is inconceivable that our economy could not in due course produce almost any desired volume of such services. . . .

"The various factors affecting health are complex and have not been blueprinted. For example, there are many uncertainties as to the relation of food and housing to health, and it is questionable whether an improvement in the area of nutrition is not as important as improvement in medical services as such."

#### BOOK CLUB FOR PHYSICIANS

A book club for physicians, the Medical Book Guild of America, was organized recently to bring medical volumes to doctors at a saving and thus provide wider distribution of medical works. Members may select as few as four books during a two-year period and will pay only for books selected.

Information on the club may be secured from the Blakiston Company, Inc., 575 Madison Avenue, New York 22, New York.

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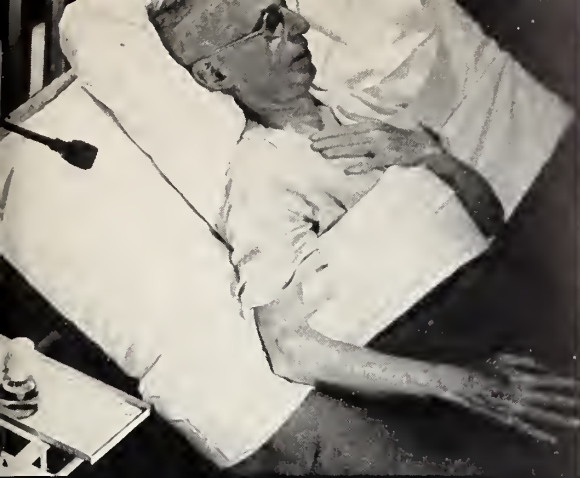
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1. Ferguson, C., and Miller, C. D.: J. Urol. 67:762 (May) 1952.

2. Trafton, H. M., and Lind, H. E.: Ibid. 69:315 (Feb.) 1953.

3. Blahey, P. R.: Canad. M. A. J. 66:151 (Feb.) 1952.



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## LILLY AID TO KOREANS

A substantial gift to 300 Korean war orphans was made recently by Eli Lilly and Company in response to an appeal from two Americans on the scene, an Army sergeant and a chaplain. A gift shipment of tincture of merthiolate, enough to treat wounds, cuts, and abrasions for at least a year, was sent.

The story of the needs of the Korean orphans is a typical example of the misery and want of 100,000 parentless children in that land. It is to meet such needs that the American-Korean Foundation is now seeking a relief fund of \$5,000,000. It was reported that the antiseptic was "sorely needed" because military personnel could not spare enough.

eases, and Classification of Patients with Diseases of the Heart.

## HEALTH INSURANCE BOOKLET PUBLISHED

The seventh annual revision of the health insurance brochure published by the Council on Medical Service of the A.M.A. is now available on request. In this booklet, "Voluntary Prepayment Medical Benefit Plans," each plan is described by summary of benefits, enrollment at the end of 1952, and other pertinent data. In addition, other types of programs are described to give examples of voluntary methods of insuring some of the costs incident to health care.

## PAMPHLETS ON HEART DISEASE AVAILABLE

A number of pamphlets on heart disease, distributed by the American Heart Association, may be secured without charge from the Kansas Heart Association, 112 West Seventh Street, Topeka. The following titles are available: Food for Your Heart, Heart Disease in Children, Prevention of Rheumatic Fever, Varicose Veins, Diagnosis of Congenital Cardiac Defects in General Practice, Heart Disease in Pregnancy, Returning Cardiacs to Work, Proceedings of First National Conference on Cardiovascular Dis-

## NEW WINTHROP-STEARN'S FILM

A new motion picture film in color and sound, illustrating the effectiveness of radiopaque compounds in x-ray visualization of the gall bladder and bile ducts, has been produced by Winthrop-Stearns, Inc., for use by the medical profession. Prints are available for showing to medical society groups and hospitals.

Operative cholangiography and preoperative oral cholecystography are demonstrated in detail in the film, which was made at the Latter Day Saints Hospital, Salt Lake City.

## Announcing the Twenty-Third Annual Conference of The Oklahoma City Clinical Society

OCTOBER 26, 27, 28, 29, 1953

H. DAVIS CHIPPS, M.D., *Pathology*, Director of Laboratories, Ochsner Clinic and Foundation Hospital, New Orleans, Louisiana.

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MURRAY M. COPELAND, M.D., *Surgery*, Professor of Oncology, Georgetown University Medical Center, Washington, D. C.

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Woman's Medical College of Pennsylvania, Philadelphia, Pennsylvania.

PERRY S. MacNEAL, M.D., *Medicine*, Associate in Medicine, Jefferson Medical College, Philadelphia, Pennsylvania.

LYMAN MASON, M.D., *Obstetrics*, Clinical Professor of Obstetrics and Gynecology, University of Colorado School of Medicine, Denver, Colorado.

GEORGE PINESS, M.D., *Allergy*, Associate Professor of Medicine, University of Southern California, Los Angeles, California.

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# THE JOURNAL

*of the*

## KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

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Volume LIV

OCTOBER, 1953

No. 10

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### *Planning for Civil Defense*

*Editor's Note. Mr. Standish Hall, director of Civil Defense for Kansas, was asked to supply an introduction for this issue of the Journal, devoted to problems of emergency medical care. Mr. Hall's contribution follows.*

It has been my experience that the medical profession and its allied groups are better able to visualize what our civil defense problems would be in case of World War III than other groups who are not faced daily with human suffering and the care of injured people.

That being the case, it is only proper that this issue of the JOURNAL OF THE KANSAS MEDICAL SOCIETY should be devoted to the subject of medical organization relative to civil defense.

Much progress has been made, but much remains to be done. No one but you, yourself, can say what you should and would do after the bombs begin to fall. Intelligent thinking and constructive planning will save many lives. Of course, we shall not have anything like the supplies that we shall need or the personnel necessary to do a real job. It will be makeshift at the best, but I am convinced, if you will get your teeth into this program and shake out a plan, that you will save thousands of lives and help materially toward the winning of that war, if it can be won.

STANDISH HALL

*State Director of Civil Defense*



# Medical Organization for Civil Defense

Thomas R. Hood, M.D., M.P.H.\* and James M. Mott, M.D.\*\*

Topeka, Kansas

## INTRODUCTION

This article includes a description of general plans for meeting medical and health aspects of natural or other disasters in Kansas. It describes the problem posed us at a recent meeting of the Kansas Civil Defense Council and the actions we believed we would take. Finally, outstanding, unmet needs are enumerated. Some of these needs can be met by more intensive action on our part—others require public support and legislative action.

The effectiveness of disaster planning and application, in the event of an emergency, is clearly dependent on the public's conviction of the need. We are certain that the medical society and its individual members will contribute generously of their unique skills and time whenever these are needed. When disaster occurs, it is important for physicians and others to remain in their own communities until their services are requested. It should always be borne in mind that the physicians who remain at home and serve there are filling an important need.

The civil defense plans contained herein have been made cooperatively with Dr. Donald Trees, chairman of the Committee on Emergency Medical Care of the Kansas Medical Society.

As described below, we have devised the framework for Health Disaster Services in Kansas, along the same lines as the existing pattern of everyday services. We are convinced that our own capacity to perform will be reached and exceeded very quickly—simply by the unusual demands for control of sanitation and by communicable disease control problems. We believe that medical care should be rendered by the same personnel who ordinarily render such care. We have correspondingly divided the services shown on the organizational chart and have, with his permission, placed the chairman of the Committee on Emergency Medical Care of the Kansas Medical Society at the head of Medical Care Services.

We anticipate that, when any large-scale disaster occurs, the state health officer will promptly become director of health and medical services for the state of Kansas and will function as a part of the state's civil defense organization. The assistant state health officer will promptly move up to become

acting state health officer, in charge of all sanitation and disease control problems which arise. The medical society will be in charge of medical care.

The third major branch shown on the organizational chart is that of General Services and Administration. Here we have purposely listed two individuals, one of whom is familiar with methods of obtaining supplies through governmental channels and the other familiar with the task of obtaining medical supplies through private channels.

Not outlined on the chart are five advisory committees. These committees and their chairmen are as follows: Blood and Blood Derivatives, Dr. A. A. Fink, Topeka; Radiological Health, Dr. Galen M. Tice, Kansas City; Biological and Chemical Health, Dr. Noble P. Sherwood, Lawrence; Mental Health, Dr. William Roth, Kansas City, and Training and Public Information, Mr. Adel F. Throckmorton, Topeka.

## CIVIL DEFENSE PLAN

*General Statement.* The principle followed throughout the medical section of the Kansas Civil Defense Plan is one of full utilization of existing services, facilities, and organizations, including professional groups and individuals as well as governmental agencies. An attempt has been made to provide for full utilization of all professional skills within the framework of existing patterns of service, in the belief that any emergency which occurs will require, first, an intensification of the usual activities of a great many individuals, and secondly, activities of a new or unusual character which will place heavy and unaccustomed responsibilities on many persons. It is our task here to see that skills and services are properly organized, correlated, and augmented to meet such emergency situations as may arise.

The need for separate but well-correlated organizations to discharge the great responsibilities involved in medical care and in public health aspects of disaster problems is reflected in the organizational chart. The term "medical care," as used herein, is a broad and comprehensive one including by way of description—but not limitation—the services ordinarily rendered by physicians, dentists, veterinarians, nurses, pharmacists, hospitals, and others. The services of the many and varied types of public health personnel would also be fully utilized in performing the duties indicated below in the

\* Executive Secretary, Kansas State Board of Health.  
\*\* Director, Division of Preventable Diseases, Kansas State Board of Health.

organizational chart and the detailed description which follows.

It should be borne in mind that we are dealing with the possibility that medical care personnel and public health personnel, already inadequate in numbers to fully serve everyday needs, perhaps further depleted by calls to military service, may have to perform vastly increased duties in the event of a disaster. With these facts in mind it appears that there is a great need for training of volunteers in first aid, basic sanitation, and other subjects. The demands for service may be greatly increased by population shifts brought about by defense needs or as the direct effect of aggression.

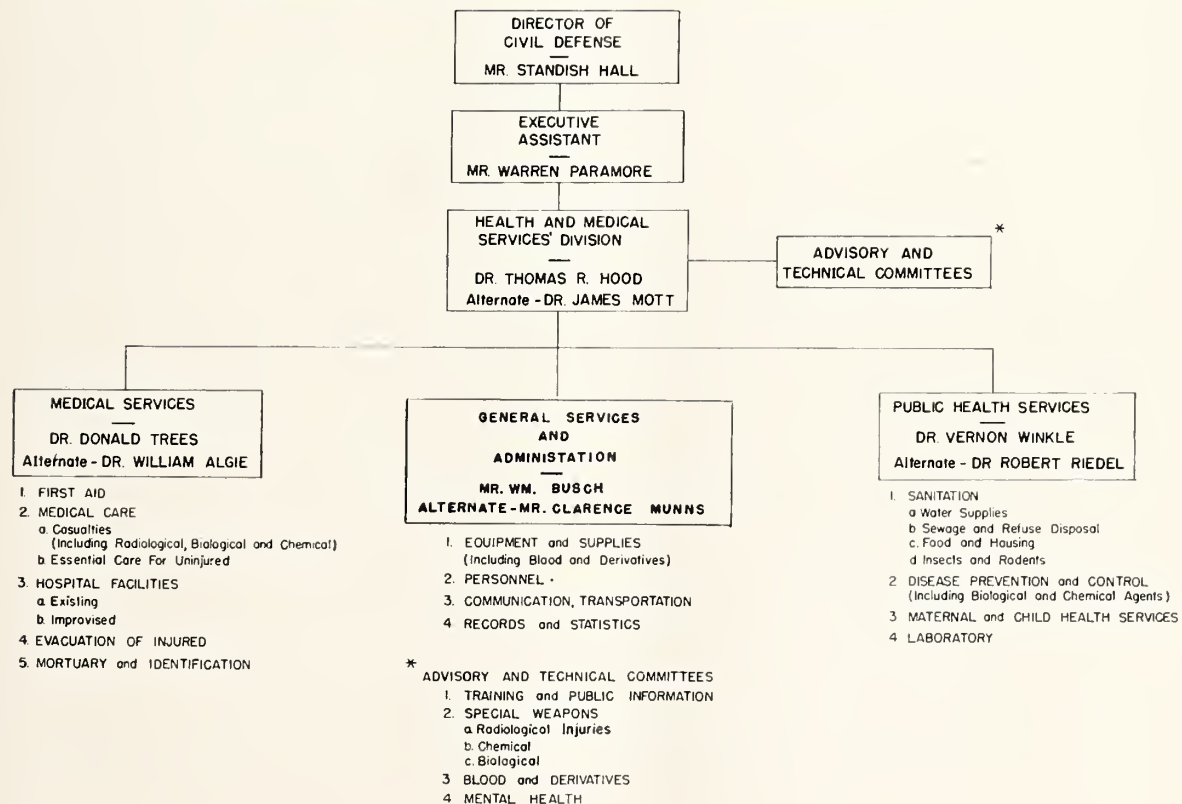
This organization and plan are intended to function in case of any emergencies resulting from any cause, whether it be natural or manmade (48-904 General Statutes of Kansas 1951.)

Plans which are developed will be of such nature that they are applicable on a state-wide basis and include such flexibility that they will allow for meeting the requests of other states or regions in the United States for mutual aid. While it is recognized that civil defense is based on a very large element of individual and local responsibility

and autonomy, it is also recognized that because of the essential nature of medical care and of public health services, and the limited number of qualified persons able to serve in these fields, plans must recognize the necessity of subordination of local medical and health services—including personnel and facilities to state direction and regional co-ordination—in order that essential services be rendered where needed as quickly as possible. Not only is this program essential to the saving of life, the preservation of health, and the maintenance of high morale of the citizens, but it must also return people to early and effective use in the nation's manpower.

*Duties of the Director.* The director of the organization on Health Services and Special Weapons Defense is responsible for the organization and allocation of health services personnel, stockpiling of suitable supplies and equipment, and the development and implementation of medical care plans. The director is appointed by the governor and functions under the general direction of the state civil defense director and the advisory council, and also relies on the advice and assistance of several advisory and technical committees and the heads of the three

## KANSAS CIVIL DEFENSE ORGANIZATIONAL CHART-HEALTH SERVICES





operating services shown on the organizational chart. A Committee of the Whole will consist of the deputy and his alternate, the director of each major subdivision and his alternate, and the chairmen of technical and advisory committees.

The organizational chart is drawn in an attempt to show clear delineation between advisory staff committees and administrative or line organization. The intent is to make full use of a variety of highly specialized skills and knowledges in developing plans and procedures, and yet provide a simple, streamlined functional organization. Coordination with other major state civil defense services is essential. These include especially the welfare services, transportation, communication, Red Cross information, and training committees.

*Functions of Civil Defense Health Services.* This service is responsible for the plans and functions in all fields related to health arising from a disaster due to natural causes or enemy action. Included are:

1. Emergency medical care for casualties.
2. Preserving essential medical services for persons other than casualties.
3. Essential public health services, including special attention to protection from biological, radiological, and chemical agents.
4. Consultation and advice to communities to assist them in perfecting their own civil defense organizations and arranging for mutual aid and support to other communities.
5. Arranging for the assignment of personnel and the procurement of supplies, communication, and transportation within the health services.
6. Special training and public information.

#### CIVIL DEFENSE PROBLEM

On September 2, the Kansas Civil Defense Council was handed the following problem and asked to describe the immediate actions it would take if confronted with the situation described. The problem consisted of an assumed 12:30 p. m. 20-kiloton A-Bomb exploded over Kansas City, zeroed on the Kansas side of the Intercity Viaduct. The estimated casualties are 21,855, with 8,605 dead and 13,250 injured. Estimated situation as to condition of the injured is that there are 5,000 stretcher casualties, 5,000 who are ambulatory or semi-ambulatory, and the remaining 3,250 need first aid treatment and can then be released. There are an estimated 20,000 homeless individuals needing food and shelter, of which half may be evacuated. The city building is demolished, but most employees were at lunch and were not caught in the building. The City-County Health Center is demolished and all stockpiled medical supplies and equipment are destroyed. Three hospitals within a two-mile radius of the blast are badly damaged and must be pre-

sumed unusable. These include St. Margaret's, Providence, and Bethany hospitals. The Kansas City civil defense director reports that most of his key men have reported for duty and are mobilizing their personnel, but that most of the people are badly shocked and excited, and it appears that all possible help will have to be rendered from outside the city.

Suggested actions include immediate notification of all key individuals shown on the Health Services organizational chart, with a request that they report for duty without delay. In addition, officers of medical societies in each of several counties closest to Kansas City will be asked to furnish seven first aid teams immediately. They will be informed where to send these teams; each team is expected to consist of two physicians, one dentist, three registered nurses, and one pharmacist. Seven aid stations will be established immediately in specified grade schools and junior high school buildings, and Wyandotte High School will be converted to an emergency hospital. Two points would be designated for ambulance dispatch points. All hospitals in adjoining areas will be notified to discharge immediately all patients who can be moved to homes. The Kansas University Medical Center would be notified that we expect to send it all cases requiring immediate surgery.

The Civil Defense Depot at St. Louis would be requested to immediately ship, by air, 1,000 litters, 2,000 blankets, 3,000 morphine syrettes, 5,000 units of plasma or plasma extender, 1 complete 250-bed hospital, complete equipment and supplies for 10 first aid stations, with additional duplicate shipments of expendable supplies every 24 hours until further notice. In addition, we would request that the Kansas civil defense director immediately furnish 14 ambulances with two drivers each, to be followed as soon as possible by 36 additional ambulances, with drivers, and 5 trucks to shuttle between the Kansas City, Kansas, airport, hospital, and first aid stations. We would also request that immediate provision be made to feed and house medical personnel and that 105 trained first aiders and 700 litter bearers be placed at our disposal.

This plan obviously covers only the early phases of the activities that would be called for and reveals how drastically inadequate our efforts and supplies might be.

It appears that our state of readiness is inadequate and, in particular, that medical personnel would meet with early frustration because of the lack of necessary equipment and supplies. It also immediately appears that the Kansas civil defense organization should proceed to stimulate training of additional first aid personnel and litter bearers and with a realistic inventory of the number, types, and

location of all medical and paramedical personnel in the state of Kansas.

Immediately following the above civil defense exercise, we renewed our plea to the civil defense director for sufficient funds to stockpile essential medical supplies in fireproof warehouses outside of critical target areas. These supplies should include the following items: 10 first aid stations, with 20-hour supplies; 5,000 morphine syrettes; 1 auxiliary hospital; 10,000 units of plasma or plasma extender. These purchases are recommended on the basis that they represent items which would be urgently needed in the event of any considerable number of casualties, and because no improvised substitutes could possibly be adequate. We also expect, in the near future, to prepare a set of standard maps of Kansas, with overlay, showing all types of medical installations and medical supply facilities in Kansas, as well as maps showing county populations and the number and types of active medical and paramedical personnel in each county.

Following the completion of this task, we expect

to again confer with medical society and other professional representatives and arrive at some working figures for estimating the minimum number of physicians, and others, who would have to be retained in each county to take care of ordinary medical emergencies arising locally. Therefrom we could quickly deduce the number of individuals who might be called out of each county to assist in any emergent disaster.

#### CONCLUSION

We have here attempted to outline the basic thinking behind the general plans and organization for medical aspects of civil defense in Kansas; have outlined the plans and organization, as presently visualized and, finally, have shown through the medium of a civil defense problem, how the organization might function and what the most glaring deficiencies would be. It is a pleasure and privilege to have presented this material to the members of the Kansas Medical Society.

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## Civil Defense Organization\*

The Federal Civil Defense Administration has prepared numerous pamphlets on various phases of civil defense activities. These contain detailed descriptions of recommended functions in the different services. Portions of this material have been revised by the Kansas Office of Civil Defense to make them more appropriate for the particular situations applying in this state. The following article contains material from those and other sources. It is not sufficiently complete to be considered a summary or digest of the information contained therein, but is rather prepared as an introduction to the subject and as a tentative guide to physicians preparing local defense projects or who may volunteer their services under the state program.

By way of introduction, much might be said pro and con concerning civil defense activity prior to its need. On the one side, it might well be considered a waste of effort since civil defense might never be called into use and, even if needed, the requirements would not fit into the plan as formulated on paper. The other side of this argument appears more realistic since whatever preparation may be obtained prior to the need for such services is just that much better than none at all.

In case of a disaster occasioned through natural

or accidental causes, assistance from areas outside the affected location might be needed immediately, and the time lag during which an emergency program is implemented could well be detrimental to the injured. In case of war in which enemy action is brought to bear within this nation, areas struck will need civil defense assistance from adjacent communities without any question whatsoever. Moreover, in case of war, the armed forces will be of little or no assistance in civil defense.

This project, therefore, has a two-fold purpose. It could be called into action in smaller units for any accidental situation arising within this state and, in case of war, provides a framework for self protection. This is essential in the saving of civilian lives, but, in addition to the above, is useful in assuring the early resumption of production for the war effort. Therefore, the Editorial Board of the JOURNAL determined to devote this issue to the subject of civil defense, in the hope that physicians in communities all over the state may be stimulated to organize units of whatever size might be provided within their own respective areas.

#### THE FEDERAL GOVERNMENT

Some years ago, the United States Congress appropriated a sum of money to be available to the states on a matching basis with which to aid in the

\* A compilation of material issued through federal and state manuals listed in the bibliography.



establishment of civil defense projects. These were listed in the *Journal of the American Medical Association* early this summer and represent only the potential rather than the real allotments available. In Kansas, for example, a sum of \$1,180,000 is available through the federal government for civil defense, of which \$97,549 is available for medical expenses. This compares favorably with most states and at the same time reflects graphically on the many states that have failed to take any part in such programs. Half of all states received no tentative appropriation for medical care, simply because there was no provision under which allotments could be obtained. Nor has Kansas received the above stated amount since each federally appropriated dollar must be matched with an equal amount of state money. The 1953 Kansas legislature gave only a small sum, if any at all, to civil defense, and therefore this program is largely the result of planning and certainly is not ready for operation.

#### THE STATE PLAN

The Kansas civil defense plan, described elsewhere in this issue, has been completed as far as its broadest organization is concerned. The governor of the state directs the program. He has appointed a director of civil defense, and each of the major subdivisions is headed by a director of that service. These include, among other things, such functions as transportation, welfare, fire, public information, etc. There are 11 such deputies, each a member of the Council of Civil Defense for this state.

Counties likewise have the rudiments of plans in existence. Here the project is directed by the mayor of the county seat city and, depending upon his individual efforts, there are 8 deputy directors representing, on a county level, similar services to those named above. In the larger communities, considerable local organization is completed. It is recommended that all counties prepare at least a plan on paper that might be employed on short notice should a need from any cause whatever require such service.

#### HEALTH SERVICES

Perhaps the most urgent of all civil defense activities is the Division of Health Care. This is certainly true for a brief period immediately following a disaster. Even a small disaster, such as the crash of a commercial plane, could immediately tax local medical and hospital facilities in a small community far beyond their capacities. A tornado might require health services from a wide area around the affected location, and, in the event of an atom bomb falling upon a congested area within this state with an estimated potential of 50,000 persons injured, every possible resource available in this state

would not be sufficient to care for the need. So, even if civil defense is never used, it appears worthwhile as protection. It is insurance that can pay large dividends, most particularly in the field of medicine where the hours of practice drilling will not be required, and it can save that all important loss of time within the first few hours after the disaster strikes.

#### MEDICAL ORGANIZATION

The principal immediate need is to prepare on paper the actual names of physicians and other attending personnel who will be available as teams. Units will vary as to size according to the numbers and types of physicians available, but in every component medical society there are sufficient members so that a portion may be spared for services elsewhere. It is those names that should be made available to the local civil defense authority. In such preparations, there should be borne in mind the necessity for continuing usual local medical care. In preparing a disaster team, it is roughly presumed that no more than 50 per cent of the available medical strength should be requested to leave the community at any one time.

The federal government designates one type of medical unit to consist of a first aid station group. As is usual with federal projects, their suggestions are elaborate, estimating a first aid group to consist of 232 persons, of which 3 are physicians. They include such others as 105 litter bearers, 16 ambulance drivers, etc. For Kansas, such organization is impractical and could well be accomplished on a smaller scale.

There should, however, be at least one physician in charge of each first aid station. He should be carefully selected because of an exceptional ability in rapid diagnosis. The first aid station will be located as close as practical to the actual scene of the disaster. Through this station, all injured will pass and be evaluated. In brief, this doctor is responsible for segregating the injured and directing the future course of their care. He will quickly determine their status according to one of four categories.

Speaking now in terms of wide-scale disaster in which many are injured, he will first of all delegate the hopelessly injured to the clergy and lay people for terminal care on the scene. At a time when every facility is taxed to its utmost, it becomes uneconomical to utilize professional care in a terminal attention for the hopelessly injured. In the second category are the seriously injured. At the first aid station, only the immediate life saving measures will be introduced. Pressure bandages will be applied, or tourniquets, as indicated. An initial morphine injection will be given if required, or hasty tem-

porary splints will be applied, and those patients will then be ordered to the base hospital and will be immediately transported by ambulance for further care. In the third category will be found the less seriously injured or those persons who may need considerable medical attention but are not in immediate critical condition. They, too, will be given whatever first aid is required and will be placed on a stand-by basis to be cared for when the emergency has passed. The fourth category comprises the walking injured who will be turned over to aides for bandages or whatever other medication may be given, and then discharged.

It is obvious that the one or two physicians directing activities at this extremely busy location will not have time to give personal attention to each victim. They must initiate the treatment by order and depend upon the ability of aides who have some training in first aid care. The importance of the physician in this position is that he will make an immediate determination of the victims' extent of injury. Upon his judgment will rest the ultimate success or failure of the entire disaster effort.

He will of course need help from many people, not only those who will actually perform the services of placing splints upon broken arms, but he needs an administrative staff to keep records of what was done as well as the names and addresses, if they can be obtained, of all persons who pass through the station.

Behind this area, at the closest possible location, will be established a base hospital. At this point services are required for all specialties in medicine, including physicians who will be engaged in other than caring for the traumatic cases. It has been estimated, for example, that approximately 20 per cent of all pregnant women adjacent to the area covered by an atomic bomb will miscarry. They will be directed through the first aid station to the base hospital, to be placed under the care of an obstetrician. Mass hysteria could quickly require the services of psychiatrists in numbers far exceeding their availability. Therefore, the organization of a base hospital must be considered with such patients in mind in addition to the physically injured. Again, in the case of widespread disaster, even the base hospital will quickly be overcrowded so that here, too, an evaluation of the patient's condition will need to be made rapidly so that professional services can be used to maximum efficiency.

It has been planned by the Civil Defense Council that school houses shall be requisitioned as hospitals because they will more readily be adapted for such purposes than any other common structure. School houses are centrally located, whereby volunteer civilian help may be quickly assembled. They are more adaptable than hotels because their rooms

are larger and they are usually only one or two stories tall. In the event of an electrical failure, a hotel would become almost useless as a hospital. Moreover, schools have kitchens and adequate water supplies. In the state planning, it is expected that the school children themselves shall be utilized for taking out desks and other equipment. As rapidly as possible, Army-type cots shall be brought in, and by the time the medical team arrives the physical facilities should be as nearly ready for operation as they ever can be. Therefore, in the larger population centers, or in wider areas of rural locations, the various specialists should organize into complete hospital staffs and be prepared to move out of their own locations to work in these temporary hospitals.

A third type of medical service necessary under civil defense will be the existing hospital facilities outside the immediate disaster area. Here, also, a complete staff will need to be available, and for a long while following the disaster will be required to provide reconstructive care. In preparing personnel for civil defense, all these factors must be borne in mind. The staff at local hospitals must not be depleted. There must, however, be in addition to those available for immediate call, a number of completely organized hospital staffs. In addition to that, there will be needed a number of first aid units, each directed by at least one, or preferably more than one, physician. And, finally, there must still remain within each locality enough basic medical care to provide services within the locality as needed. It is easily seen that the task might be a formidable undertaking and that no amount of planning can ever provide enough. The question then is rather that of planning to make a little produce its ultimate maximum in efficiency, and that is the principal reason for presenting this subject in the JOURNAL.

#### MATERIAL AND EQUIPMENT

As if the above did not provide sufficient difficulty, there are other factors that will greatly complicate the health effort in time of disaster. For example, the curious and the well wishers will immediately jam the highways, making transportation of official personnel almost impossible. Any number of physical conditions might further complicate the picture, such as contamination of food and water supply, etc.

Perhaps even greater than any of the above is the fact that all essential equipment and material will not only be in short supply but may possibly be nonexistent. It is easily possible that disaster teams may assemble at a designated point and be forced to continue operation not only for hours but for days without materials or equipment to work with. Regardless of how much previous planning is done,



this problem can never be completely solved and will have to be accommodated to existing situations, whatever they might be. Equipment could be borrowed from other hospitals, but it must be remembered that a school house converted into an emergency hospital begins without any equipment.

The federal government is stockpiling essential supplies. Exact information is not available, nor would it be of any particular value even if it were accurately known. However, something in the vicinity of 20 per cent of the necessary supplies for 5,000,000 casualties for a three-week period has already been accumulated. The decision as to what shall be needed and procurement of these items at reasonable cost represents a formidable difficulty.

One hundred items have been selected somewhat arbitrarily to be the most essential. For example, large numbers of blankets will be needed, and, instead of spending considerable sums on such items, a new type of single-use paper blanket has been developed. These may be discarded after they have served their one-time purpose and are more economical than blankets of wool or other cloth. Stories are told of airways that cost \$1.50 each but have been remodeled by civil defense authorities and are available at 15 cents apiece. It is quite possible that there would be some criticism concerning their effectiveness, but in planning for large numbers the original cost of high grade material always places a severe budgetary brake upon any item. As simple an item as portable flashlights, when produced by the millions, can become a major expense. Here also they are designed for short time use and discard, which results in an individual saving over comparable equipment to be used by the armed forces.

Another problem concerns drug supplies that become outdated. Considerable amounts of penicillin are already available, as is smallpox vaccine. Tetanus antitoxin and other items can be gathered from supply houses in a reasonably short time. Narcotics are available in adequate amounts, but the problem of release and distribution becomes a serious obstacle.

In general, the federal plan is to withhold 50 per cent of all supplies, to be used wherever a disaster of first magnitude occurs. The other half is to be dispersed to the states. Kansas has already received shipments of certain material which is currently being packaged and stored for further distribution as local defense units become implemented. The federal government has even packaged entire hospitals into units weighing  $3\frac{1}{2}$  tons that are available for shipment where needed. In these units are included portable electric systems, self contained steam autoclaves, and a considerable supply of instruments, bandages, a variety of drugs, etc. These are presumably complete even to administrative supplies such as typewriters, stationery, etc.

#### OTHER SERVICES

The objective of this review is to acquaint the physician with the medical side of civil defense preparations. From the point of view of numbers, certain other services are considerably larger. Planning is proceeding in those areas also. Air raid wardens are being organized throughout the country. Communications programs are planned toward the utilization of all resources that will be rapidly organized to fill in in case of the failure of usual communication procedures. The solution of traffic problems will be a major item, and here, too, plans are being made for the maintenance of highways to permit the transportation of essential vehicles. In many areas all trucks and vehicles that might be converted into ambulances have been listed, and plans are made for requisitioning them into essential service should the need arise. Welfare programs have been organized to take care of shelter and clothing. Police and fire services are planning toward the expansion of personnel to include thousands of volunteers who will be available for duty on call.

There are, however, even more specific services requiring a considerable skill, as for example decontamination teams. In Kansas, this too has been completed, at least as far as plans on paper are concerned. In the event of war damage to a Kansas community by the atom or hydrogen bomb, monitoring teams with equipment to detect radioactive and chemical or gas contamination will be the first authorized persons to enter the affected area. As rapidly as they declare sections to be safe, the first aid teams and emergency first aid stations will be moved into those locations. Another service already anticipated concerns sanitation. As soon as possible after the occurrence of a disaster of the above mentioned type, food and water supplies will be analyzed and sorted according to their acceptability.

Here again, it would be wasteful to produce hundreds or thousands of expensive and accurate Geiger counters and leave them idle against the possibility that they might be useful. So a substitute has been devised. The instrument appears to be known as a pocket dosimeter which is capable of registering the presence of radioactivity within rough limitations. The use of this instrument is not expected to produce completely accurate results. It is designed, rather, to provide rapid quantitative analyses and is at least accurate enough to be of practical value. Specimens of food will be prepared, containing some radioactive material within the level of safety. The monitor will check the dosimeter reading of the local food supply against the sample he carries in his pocket. If a rapid reading discloses contamination to be greater than the sample, the

food will be discarded; if less, it will be considered safe for consumption.

#### OTHER TYPES OF WARFARE

A discussion of this kind would not be complete without at least mentioning as potential threats various other types of instruments of warfare. Many of these are little known at the present time. Authorities are reluctant to predict their value, and certainly not much has been accomplished with reference to defense. They are mentioned here because it is known that they represent potential weapons and, if used, may serve to seriously complicate the entire civil defense effort.

One is biological warfare. What form will be used or how it will be disseminated can hardly be predicted. It is presumed, however, that if used it will probably be prior to an overt attack because its effect will be manifested relatively late. Authorities believe that almost nothing can be done at this time, except possibly to increase the programs of immunizing the population against smallpox, typhoid, and diphtheria. If such warfare is used, and an air raid occurs at the height of a considerable epidemic, the additional complicating factors can easily be imagined.

Chemical warfare has also been suggested. This again produces problems that cannot now be effectively counteracted. New materials may produce situations that cannot be anticipated at present, but most authorities are of the opinion that some form of mustard gas or a nerve gas might be used. Variations are known to be available in forms that are not readily detectable. Probably the only present defense is to evacuate a population as rapidly as possible after the existence of such chemicals in the atmosphere has been established. This probably will become known first through the recognition of symptoms among the patients earliest affected.

Also to be considered are such problems as bacterial warfare, utilized against existing food supplies. The Department of Agriculture and doctors of veterinary medicine are being alerted concerning outbreaks of animal diseases. Similar would be the implantation of plant diseases either through the introduction of insects or substances that might destroy edible crops. The most distressing problem relating to this subject is the fact that it might take several years to realize that this has taken place. At the present time, there is a surplus of grain,

but, in the event of that type of war activity, it might be a number of years before sufficient food supplies could again be raised to eliminate the danger of starvation.

#### SUMMARY

A review has been presented of some of the projects under way toward providing the United States with an effective means of civil defense which might be utilized following accidents or disasters originating either through natural causes or as the result of enemy action. A very brief description was given of the various types of services that are being mobilized in this regard.

Slightly more attention was paid to the necessity for medical mobilization because medical care will undoubtedly become the most critically needed service immediately following a disaster. It was pointed out that practice periods and test runs are not essential for physicians because they will function largely in the field of their primary activity, except for greatly expanded needs. However, the need for medical mobilization is present.

It is recommended that county medical societies plan now toward assigning physicians to civil defense tasks, keeping in mind that no less than one-half the total local supply of physicians must be retained in the community at all times, and that one-half should be available in smaller units as first aid teams or organized into complete hospital staffs. For this latter, care should be taken not to deplete the staffs of existing hospitals which must continue to function even in time of disaster.

The above is not intended to suggest that an enemy attack is more imminent today than in the past. It is presented in this issue of the JOURNAL because it appears wiser to be prepared against the worst that could happen and never be needed rather than to suddenly be confronted with the need and not be prepared.

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The civilization of a country consists in the quality of life that is lived there, and this quality shows plainest in the things that people choose to talk about when they talk together, and in the way they choose to talk about them.

—Albert J. Nock



# The Medical Role in Civil Defense

There is a story told of a woman who was rescued out of the debris of a bombed building in London during the height of its air raids in World War II. Discovered to be conscious, she was asked to supply some identifying information and, when asked of the whereabouts of her husband, she said, "He joined the army, the coward."

During the intense bombing of London, the civilian population must certainly have considered life with the army a relatively safer experience. It is ardently hoped that the experience of London will never be repeated and that the United States may continue to be spared the havoc of direct enemy action. A small preparatory effort in the field of civil defense organization would be no sacrifice at all in contrast to its value if needed, this value being reflected in terms of lives saved, the reduction of panic, and the resumption of the nation's war effort.

Even that, although by far the most dramatic phase of civil defense, is not necessarily all the advantage to be gained by such planning. Except for a few relatively minor occurrences, Kansas has long been free from major disasters caused by accidental or natural means, but, should such occur, it would not need to be numerically very large before health facilities within the area became overtaxed. Nearby areas would immediately offer aid, but the resulting confusion, even if it lasted only a short time, could seriously delay the effective work that might be done. Therefore, it is within this realm of activity, perhaps even more significantly than in the preparation against war disaster, that an organization for civil defense is needed.

Whatever the cause, a large scale disaster would immediately establish a vast need. If it is of considerable proportions, adequately trained health personnel would never be available in sufficient quantity. Much service would have to be performed by lay persons with little or no training. Their effectiveness would be in direct ratio with whatever previous training they had received. The subject, then, is of importance to all persons, and the lagging interest in first aid classes for civilians is genuinely regretted. There can be no argument against the statement that education prior to a disaster will aid in the prevention of panic. It will help prepare people for tasks they shall suddenly be required to perform. It will reduce the confusion. It is, therefore, a prophylaxis against the stunning effects of disaster which might be outlined as adequate education, mobilization, preparation of supplies, and possibly the prior immunization of the population against certain diseases such as tetanus.

In case of a disaster, the role of the doctor will be

very similar to the role of the physician in his usual practice. The difference is only one of degree. There will be more patients requiring attention, perhaps infinitely more. There will be fewer persons to assist him in rendering this care. The help will be awkward and inexperienced. There will be less material with which to work, perhaps none at all. Therefore, a disaster of considerable magnitude will tax not only the physical strength and the professional skill but the tolerance and ingenuity of every doctor in this state.

He will be confronted with the task of saving the most possible lives. He will discard the finesse and the luxuries of his everyday practice and dispassionately segregate casualties according to priorities or into the designation that time spent in their care is hopeless. Elsewhere in the JOURNAL, medical organization has been discussed and some remarks were contained concerning equipment. Here a brief résumé is introduced concerning the difference between emergency care and the usual private practice of medicine. Again, the distinction is largely a matter of degree but can be defined in a number of services that will increase the physician's efficiency.

## MEDICAL PREPARATION BEFORE THE DISASTER

A large-scale disaster will immediately create a problem of performing only such services as will serve to save the lives of the greatest number. All else must be discarded for the moment. There are things that may be accomplished prior to the disaster. The first of these is medical organization, described elsewhere. The second is the need for accumulating adequate triage material. This includes such simple things as scissors and the hundreds of other items the physician is accustomed to work with but which, without advance planning, will not be available when needed. A third concerns the organization of people. It is planned that school houses may be used as auxiliary hospitals, and certainly the Parent-Teacher Associations would provide a resource of interested lay persons who might perform many worthwhile duties at the time of disaster but whose services could be invaluable during the preparation period. For example, a community survey might list the locations and number of available extra cots and beds that might be collected upon a moment's notice. Blankets, clothing, even dishes and cooking utensils, might be urgently needed and unavailable except through local resources. It is certainly not recommended that these be assembled, but if lists could be obtained, collection would then become a relatively simple task.

Fourth is the problem of training. Even one hour of instruction for lay people by a physician would

reap dividends if their services were needed. One hour of explanation on how an injured person will be placed on a litter, on the need for proper identification, etc., would certainly not be time wasted. And, finally, it appears that a certain amount of publicity could be useful. There is a difference between the frightening type of story that paints pictures of mass casualties and calm realization that the best efforts of our people are needed to produce effective results. It is that type of publicity that can well originate within the profession.

#### FIRST AID MEDICAL STATION

The first aid station shall be the first line of medical care. It shall be placed as near the scene of disaster as practical, and in the case of an atomic explosion will be located at the closest point declared safe by the monitor service. All casualties will be directed to the first aid station.

Medical decisions must be made rapidly and accurately. A quick sorting of casualties will separate the hopelessly injured and place them in charge of the clergy and lay aides without further medical care. The second category will consist of the seriously injured who will receive preliminary lifesaving or limb-saving treatment at this point and then be transported to rear hospitals. The third category will be the lesser injured or those for whom treatment may be temporarily delayed. The director of the first aid station must have unusual ability and calm judgment. His rapid diagnosis becomes of utmost importance.

The first aid station also serves as the point at which casualties are decontaminated through the removal of clothing and by whatever other means might rapidly be employed. Here also records and reports must be prepared on each casualty and appropriate messages sent along with those who are to receive additional hospital treatment. Of equal importance, although often neglected until the emergency arises, is the need for establishing a chain of command. Duties for each person, for the skilled, the semiskilled, and the unskilled aides must be delineated with a clarity that enables each to perform his most effective service with the least confusion. All this must be accomplished without adequate personnel and equipment and can readily be seen to require the services of an unusual medical director.

It often has been said that the physician will require little advance training for civil defense work. His efforts will still be in the field of medicine, with only a change in emphasis. There are, however, certain alterations of technique. With possibly thousands waiting to be cared for, it becomes impractical to exert heroic effort in the attempt to save an individual life. The entire purpose is to provide the

greatest benefit for the most people. Work must be rapid. Care is of an emergency variety, and only those services that are essential to the saving of life can be performed at the first aid station.

The director of the station will immediately draw out of line for first-priority care those patients with penetrating wounds of the abdomen, with sucking wounds of the chest, with wounds of the face or neck that destroy or obstruct the airway, with traumatic amputations, and those who, because of hemorrhage or shock or open fractures or injuries to major blood vessels, will rapidly fall into serious conditions. They must be seen first. If presumed to be in hopeless condition, they shall be set aside. The others will be given fast, lifesaving treatment and immediately shipped to emergency hospitals.

By way of example, the first aid station may shortly exhaust its supply of sterile dressings and must thereafter utilize whatever cloth can be obtained. Dressings shall principally consist of the pressure type to prevent further wound contamination and reduce continued blood loss. Once completed, this dressing must be left in place until the victim reaches a hospital where more complete care can be given. The only exception is upon the decision of a physician and then for reasons of saving the victim's life.

A compression dressing will generally reduce hemorrhage within safe levels, and, if it fails to do so, a tourniquet should be applied. A recent technical bulletin of the Civil Defense Administration advises at some length that a tourniquet "should be used only for life-endangering hemorrhage that cannot be controlled by other means." This should be placed as low as possible, proximal to the wound, and a tag should be attached giving the location and the time of application. It has been determined that it is no longer good practice to release tourniquets at intervals because lives have been lost through this procedure while it has actually prevented the loss of very few limbs. Therefore, if a tourniquet is required, it should be left undisturbed for three or four hours if necessary. Even that length of time produces relatively little risk of ischemic gangrene, while the repeated release of the tourniquet increases the risk of fatal shock. The tourniquet should not be released except by a physician who is prepared to control the hemorrhage by other means and to adequately replace blood volume. In case of a large-scale disaster, this probably cannot be accomplished before the victim reaches the hospital.

The above has generally been established as accepted procedure also in the case of traumatic amputations. There will be little time at a first aid station for debridement or for the careful exploration of wounds for foreign matter; neither will



operating equipment be available nor aseptic conditions prevail. Therefore, these procedures are secondary to the control of hemorrhage, and nothing more than absolutely essential service will be performed, after which the patient will be transported to the hospital.

Emergency splints will be put on only if the casualty cannot otherwise be safely transported. Slings will be improvised from the patient's clothing. A fractured humerus may be bound to the chest. A folded newspaper may serve as a splint for the forearm or wrist. A sharp ax with which to fashion splints from trees or nearby lumber immediately becomes an essential instrument at a first aid station. Should a cast be required, this must be split or bivalved to prevent circulation embarrassment during travel. There is no time for attempted alignments of bones at a first aid station. A fluoroscope, even if available, will be used for many other purposes and cannot be released for bone alignments. Moreover, the alignment probably would not hold during transportation. Injuries to the skull and spine require special care, especially on the part of litter bearers who should be carefully instructed in this regard before reporting for duty.

The problem of tetanus will reach serious proportions. The best treatment, quite obviously, would be to have actively immunized the entire population with tetanus toxoid prior to the disaster. Then a stimulating dose of toxoid could be made routine at the first aid station for all casualties with open wounds. In the absence of this advance protection, there remains some doubt as to where or when the antitoxin should be administered. Many victims will be unable to recall whether they have previously received such injections, and the effort required for making skin sensitivity tests and the carefully repeated injections might occupy more time than is available at the first aid station. Therefore, this should be determined by the size of the disaster and the availability of material and medical care. If not performed at the first aid station, it certainly should be planned for and accomplished rapidly upon the victim's arrival at the hospital.

In patients where satisfactory evidence is obtained that a series of three tetanus toxoid injections has previously been received, a booster dose of tetanus toxoid 0.5 to 1 cc. hypodermically should be given. Patients not previously immunized should receive tetanus antitoxin 3,000 units hypodermically, but only after a negative skin test. Where hypersensitivity exists, increasing fractional doses of antitoxin should be given, beginning with 0.001 to 0.01 cc. at intervals of 20 minutes. Adrenalin should be available in case of anaphylactic reaction. In the presence of clinical infections, the dose of tetanus antitoxin may be repeated every 7 days for 2 or 3 doses.

But, again, in a large scale disaster, this type of treatment cannot be performed at the sorting station and must be done later.

Morphine will be distributed to the first aid station but should be administered with caution, and possibly not at all, to the walking wounded. It should be recalled that the absorption of morphine will be retarded in many of the seriously wounded cases, and, if repeated doses are given, morphine poisoning might result later when circulation has been improved. It is generally recommended that morphine be given at the first aid station only to those in severe pain and that the standard dosage be one-sixth of a grain given intramuscularly. This should not be repeated, except under express orders of a physician, until the patient is at the hospital. The physician should further familiarize himself with average weight tables for children and be prepared to administer smaller doses where indicated.

In a large-scale disaster, the supply of blood and blood derivatives will fall short of the immediate demand. This must quickly be anticipated and used sparingly until adequate supplies can be obtained. In case of shock recognizable at the first aid station, blood replacement is given not to obtain normal pressure but to provide a level of safety. Plasma and plasma expanders are useful for this purpose but should be recognized as stopgap therapy. Again, this becomes a matter of providing emergency care for the most people, and there is no time to adequately follow a long course of infusion for an individual. It is also readily recognized that cross matching will not be practical under those conditions. Therefore, if whole blood is used in the initial emergency following a major disaster, it must be type O only.

One of the major responsibilities that will confront the triage officer will be the evaluation of burns. Here, again, federal handbooks outlining recommended courses for treatment state that an immediate evaluation must be made at the first aid station. Those walking patients with minor burns shall be set aside to receive treatment when more time is available or be instructed to treat themselves. Slightly more serious burns may be cared for by aides. Casualties with moderately severe burns which do not immediately threaten life should be made comfortable and set aside for hospitalization as soon as the most critical patients have been transported. Burned casualties who may be saved by vigorous therapy should immediately be transported to a hospital. These are generally younger individuals with burns up to 80 per cent and others with second degree burns involving 20 per cent to 70 per cent of the body surface and varying amounts of third degree burn. Older patients with burns of more than 50 per cent of the body surface and all in-

dividuals with third degree burns exceeding 80 per cent should be set aside unless physicians have time to give them individual attention. When the physician believes there is a chance for their possible recovery, patients in this category should immediately be sent to the hospital.

The easily remembered rule of nine is recommended for the immediate determination of the extent of burns. Here body surfaces are divided by percentages to enable a quick evaluation. Each side of each lower extremity is rated at nine per cent. Each side of each upper extremity is rated at four and one-half per cent. The trunk is 18 per cent on each side, the head nine per cent, and the neck one per cent.

#### EMERGENCY HOSPITAL TREATMENT

The above is a brief résumé of a few suggestions for rapid, essential first aid care. Should a large-scale disaster occur, rapid care of a slightly different nature will also be in order at the emergency hospital. In case of an atomic bomb blast, it is presumed that hospital facilities within a three-mile radius of point zero will be out of service. Emergency hospitals will be set up in school houses. They will be staffed with specialist services as described elsewhere in this issue. Material and equipment will be faulty and in short supply if, indeed, there is any equipment at all.

At such points will be assembled those casualties who have previously passed through a first aid station and who, upon the consideration of the triage officer, are in immediate need of medical treatment. Should hundreds or perhaps thousands of such patients arrive at a single hospital, it will become impossible to give adequate care even at this point. Here the procedures will be somewhat more detailed than at the first aid station but still considered emergency measures. Reconstruction, the closing of wounds, the long-time therapy for burned patients will be performed later at permanent hospitals in the perimeter of the affected area. This section, therefore, deals only with the next phase of emergency care which follows after the first as rapidly as these most seriously injured patients may be transported to the emergency hospital.

Surgery at such a hospital will be designed to perform the greatest immediate benefit for the greatest number. Surgeons must evaluate their responsibility in relation to facilities in the emergency hospital and those that might be available in other permanent hospitals. At this point, initial wound surgery is performed. Foreign bodies or materials are removed from the wound, devitalized tissues are excised, hemorrhage is stopped, transfusions are given, and limbs are immobilized for further transportation. In case of surgery, it is considered wise to leave the

wound open after provisions have been made for drainage. In general, this is still emergency surgery, but it is performed under surgical conditions and represents one further step toward enabling the patient to withstand the next journey to a regular hospital where his care may be completed.

Transfusions will create a major problem during the first few hours, and possibly days, depending upon the number of casualties requiring blood. It is presumed that typing facilities will not be available at a first aid station and probably will not become immediately useful at the improvised hospital. Therefore, during the initial phase, group O blood must be used. If group O Rh negative blood is available without facilities for Rh typing of recipients, this should be reserved for young women and female children, for women who have had children, and for persons who have had multiple blood transfusions. If typing can be performed, then the Rh negative blood should be reserved for Rh negative persons to prevent sensitization. Of course, plasma and blood volume expanders will be used wherever possible to conserve the supply of whole blood for such patients where this type therapy is essential.

Another civil defense effort of which little has been said is the necessity for setting up an emergency procurement and blood station near the temporary hospital. It may become necessary to compromise accepted methods for processing blood. The standard for selection of donors may also need to be lowered. No compromise can be made, however, in the care with which cross matching shall be performed. Complications resulting from carelessness in cross matching are inexcusable, even during the confusion that will attend the first hours following the disaster.

Much has been written concerning the emergency treatment of burns, but this subject is complicated by many differing opinions as to the methods of choice. It appears wisest, perhaps, to select a physician with experience in this field to head the ward for burned patients and to leave treatment to his judgment. If many burned patients appear, he will quickly realize that adequate care cannot be given each individual. He must, therefore, once again segregate the casualties, according to his evaluation, as to the extent of their injuries and concentrate, at least during the initial phase, upon that group in which his efforts may save the most lives.

Almost nothing has been mentioned in this paper concerning the radiation syndrome which might represent the chief complaint of a large number of casualties. Civil defense authorities outline symptomatology in four categories. The very severe case, having received 600 r or more of radiation dosage, will exhibit symptoms on the first day. This generally begins with malaise, nausea, and vomiting, to



be followed by prostration and rapidly developing severe leukemia. During the next few days diarrhea and rising, sustained fever may be expected. Death will follow probably within 14 days after exposure.

The severe case will have received about 400 r of radiation dosage and will also present early symptoms of nausea and vomiting which will subside within 24 hours. The various symptoms will be noted up to about the 20th day, after which the patient may become seriously ill with numerous symptoms including general sepsis. Death is expected in approximately 50 per cent of untreated cases where sepsis or hemorrhagic manifestations dominate the picture.

The moderately severe cases will occur following 200 to 300 r of radiation dosage. Symptoms on the first day will be similar to the above. During the next two weeks, no definite symptoms may be noticed except a moderate lymphopenia. After two weeks, a number of things may appear, such as malaise, epilation, sore throat, petechiae, diarrhea, and weight loss. Most of these cases are expected to recover without treatment. If death occurs, it is rare prior to six weeks and will usually be due to complications such as chronic abscesses, refractory anemia, tuberculosis, etc.

Mild cases are those having received less than 200 r of radiation dosage. They will show a few of the above symptoms with fatigue sometime during the third to the sixth week after exposure. They are expected to recover, but even mild radiation injury may lead to complications and retard recovery from burns or trauma.

Treatment is mostly supportive. Patients should be given rest and sedation. They need good medical care and the restoration of water and electrolyte

balance. Good general nutrition should be maintained. There appears to be some question regarding the value of transfusions for the treatment of radiation sickness. Civil defense handbooks indicate that blood replacement should be employed only when required by hemorrhage or anemia. Early transfusions have not been shown to alter the outcome of radiation sickness.

#### SUMMARY

Material presented in this paper represents excerpts from handbooks on emergency medical care in time of mass disaster. Presented was a brief outline of recommended treatment procedures designed to provide efficient use of skilled health personnel. It is never intended that individualized care should replace the above-suggested techniques except in time of disaster when personalized service is impossible. It is further suggested that all the above are outlined in broad form to indicate acceptable procedures. They should be varied according to circumstances prevailing at the time.

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"A free society means a society based on free competition, and there is no more important competition than competition in ideas, competition in opinion. This form of competition is essential to the preservation of a free press. Indeed, I think the press should set an example to the nation in increasing opposition to uniformity."

—*Adlai E. Stevenson*

# Public Health Lessons of Kansas Disasters

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## INTRODUCTION

Quite independent of any enemy action, disasters do occur in Kansas. Some of these disasters are local, highly specialized in nature, and involve comparatively few individuals, while others are large-scale, complex generalized disasters threatening or destroying large amounts of life and property.

Kansas has been fortunate in recent years in having no generalized disasters involving a large number of casualties or a large loss of life. The localized and specialized disasters have been distressing indeed for those persons affected. They include an outbreak of a typhoid fever epidemic in a state institution, an episode of food poisoning following a company picnic, an anthrax outbreak among cattle, and episodes of diarrhea and enteritis almost too numerous to mention. The only large-scale general disaster occurring in Kansas in recent years was the 1951 flood. A number of these localized episodes have been described in reports, and these are listed in our bibliography. Many of these localized outbreaks have been confined and minimized by prompt epidemic investigations and application of specific suitable control measures. Public health work in connection with the state's one major widespread disaster is briefly described below.

Doubtless many more local disasters and local disease outbreaks would have occurred if less attention were paid to proper sanitation, food handling practices, and special preventive measures. This, of course, leads us to the inevitable conclusion that uniform conscientious application of known sanitation and preventive practices would have prevented many or all of the localized outbreaks which did occur. We are constantly striving for such application of known preventive measures for a reduction in the gap between knowledge and practice.

The work engendered by the 1951 flood can well be divided into two phases. The first phase includes the problems of restoration of sanitary facilities such as water supplies, sewage treatment and disposal, milk supplies, and problems of mass feeding. The second phase encompasses the rehabilitation and clean-up tasks. Like all classifications, this is one of convenience and overlapping does occur between the two phases.

## PHASE ONE

The 1951 flood removed 37 Kansas municipal water supplies from operation and damaged or threatened many others. Some were saved only by the strenuous labor of armies of volunteers. Warnings were issued wherever householders would find it necessary to boil water to assure its safety and purity. Numerous emergency portable water purifiers were set up in strategic places; plant personnel, public health engineers, and others accomplished difficult tasks in restoring water plants within a relatively few days following the flood. In many places, sewers were plugged with silt and refuse from the flood and had to be cleaned or dug up and replaced. In certain instances, more primitive means of sewage disposal had to be utilized for temporary periods.

A supply of pasteurized milk was maintained in most areas through pooled use of operable plants. Where this was impossible, the public was advised to boil milk before drinking it. Lack of refrigeration in some areas made it imperative to distribute and use milk and other perishable foods immediately.

*Mass Shelters and Feeding:* Mass shelters were used in communities where large numbers of people were displaced from their homes. Demand for space in the mass shelters did not rise to a peak immediately following the crest of the flood, but rather a few days later. Apparently many individuals were able to make temporary arrangements for shelter with friends and relatives, but when it appeared that it would be some weeks before other housing was available, these refugees found it advisable to move to a public shelter.

Problems arose in these shelters relating to overcrowding, inadequacy of rest rooms, and food preparation and preservation. Specialized problems arose in connection with those individuals who were infirm, either physically or mentally, and mothers and infants required special attention. Families who were enduring the shock of the flood and destruction of their property often had to endure the additional trauma of family separation, since physical facilities in mass shelters lent themselves better to arrangement of beds in large dormitories with sexes separated than they did to preservation of family units. Mass feeding problems merit special attention.

In the writer's observation, no special problem existed other than those mentioned above in ob-

\* Executive Secretary, Kansas State Board of Health.



taining basically wholesome food to prepare for individuals in mass shelters; however, it was found advisable to keep a trained sanitarian on duty in each large shelter to assist kitchen personnel in handling food in a proper sanitary manner. We are confident that if this precaution had been neglected, one or more superimposed distressing disasters would have also occurred. It is notable that no outbreak of food poisoning did occur.

The special items which drew the attention of the sanitarians included insistence that food handlers be free from frank infectious disease in the form of skin infections, diarrhea, or acute upper respiratory infections. Insistence had to be placed on cold storage for suitable items of food. In some instances, measures had to be taken to prevent serving of inadequately prepared food (tenderized hams), to have cooked foods discarded within a suitable time limit, and to provide for adequate and thorough dishwashing procedures. The people preparing food were advised to avoid those items which are especially hazardous and especially notorious in leading to outbreaks of food poisoning. These included uncooked tenderized ham, poultry, starchy salads, cream puddings, or fillings for pastry.

Whenever possible, mothers and infants in mass shelters were segregated in a small room devoted to this purpose, and the number of visitors was held to a minimum. Local physicians agreed on a standard formula to be fed to all or nearly all of the bottle fed infants in the shelter, and careful attention was given to cleanliness in preparation of the bottles and formula. Most important was the use of terminal sterilization on the bottles. Adequate refrigeration was supplied in this area to suitably preserve the properly prepared and terminally sterilized bottles and formula.

#### PHASE TWO

The task of disposing of the unbelievably large quantities of refuse, animal wastes, and spoiled foods left as the flood waters receded placed the historic fifth labor of Hercules in diminished perspective. Surely the cleansing power of the Alphens and Peneus rivers on the Augean stables was not as great as that of the Kansas and Missouri in leaving behind massive amounts of decaying detritus. This problem was doubtless most severe in the stockyards area of Kansas City, where thousands of dead animals had to be removed and buried.

Foods of every description were destroyed or damaged by the flood waters, drug stocks in retail drug stores and in storage were damaged; something over 500 retail establishments suffered losses in excess of 95 per cent of their stocks. A general embargo order was placed on all food and drug

stocks to prevent their removal, and they were subsequently inspected and processed or disposed of under the surveillance of health authorities. Railroads disposed of goods damaged while in transit in large sanitary land fills. Often entire freight cars with their contents were buried, since the decomposition of the contents made it impossible for the railroads to employ crews to clean the cars. Approximately \$50,000 in grain was damaged beyond food use.

As a concomitant to the 1951 flood in Kansas, many thousands of individuals received injections of typhoid vaccine. While this measure is a customary and time honored one, its real need and efficacy is doubted. Our mental reservation is this—that the injection of the vaccine produces more morbidity than it prevents and that protection develops too late to be of benefit to those already exposed; it might prevent secondary cases in the event an outbreak did occur. It appears to us that the chance of flood waters or flood-contaminated waters containing typhoid organisms is exceedingly slim and would create a real hazard only in some of the backwashes of the flood. The amount of dilution of waste materials by flood waters is tremendous, and the mathematical probability of any individual acquiring typhoid organisms from the flood water is small.

On the other hand, the risk of acquiring various other enteric illnesses is by no means diminished through the administration of typhoid vaccine. Hence, it would appear that the effective steps to be taken for the prevention for the enterically transmitted disease is through the usual ones of insuring that the population has sanitary water and food supplies. Once begun anywhere in the flooded area, typhoid shots must be given in the entire area because of the public demand which arises. These injections not only produce minor illness in a fair share of the individuals who receive them, but occupy the time and attention and full energies of a large number of individuals engaged in performing the immunizations.

It is our belief the time and energy of these persons might have been much more effectively spent in other channels. Our only real reservation is that a more extended or widespread disaster might necessitate immunization protection, especially if insanitary water sources had to be used. In such event, the vaccine would have had to be given prior to the emergency for full effect.

It is notable that no case of human illness was directly traced to the effects of the flood. One small outbreak of septic sore throat did occur during the clean-up stages. A utility crew of 135 employees was placed in an area which had been flooded to check homes before gas service was resumed.

One of the members of this crew had a severe sore throat on the job, and approximately three days later 49 members of this crew were reported with nearly identical symptoms of sore throat and temperatures of 103 to 104 degrees. An epidemiological investigation showed that food for the crew had been supplied from a mobile unit of a local caterer. The methods of the caterer were good, and there was no indication that there was any food common in the cases of illness. Water was supplied to the crew by the gas company in 10-gallon milk cans with dippers. Paper cups were furnished with each water can. Supervisors in the crew admitted that the men had not used the paper cups but had drunk directly from the dippers; thus it appears that this outbreak was due to the use of common drinking cups.

#### CONCLUSIONS

Naturally occurring disasters in Kansas have been briefly described. They illustrate the need for good sanitation and disease control practices at all times, as well as showing the more acute needs which arise in the time of a disaster involving dislocation of numerous citizens and facilities. By inference, this paper points up the benefits to be derived from having trained public health personnel on hand to

direct certain phases of disaster work. It offers the chance to plead that the number of such personnel in Kansas should not be so far depleted as to render the actions of the remainder comparatively inadequate and ineffectual.

Certainly the need is plain for community and state planning for disaster. Additional volunteers should be taught the elements of sanitation, especially food sanitation for mass feeding, and they should be available to augment and supplement the efforts of regularly employed sanitarians. The fact is shown that good sanitation and public health practices can remove the boggy of outbreaks of epidemic disease at the scene of naturally occurring disasters. The injunction of unnecessary and perhaps meddlesome though traditional measures is decried. The special needs of mothers and infants are mentioned.

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## PATRONIZE JOURNAL ADVERTISERS

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## PRESIDENT'S PAGE

DEAR DOCTOR:

It was a pleasure and an opportunity for your president and executive secretary, as well as several members, to attend the dedication exercises for the Continuation Study Building at the University of Kansas Medical Center. The Kress Foundation, which gave \$150,000 for the construction of this building, was represented by Mr. S. H. Kress himself. Mr. Kress made a short and very pointed address to the assembled group and then uncovered the cornerstone. Also present were about 15 businessmen from Greater Kansas City who had seen the need for this building and who had been most generous in their financial support.

The evolution of this building is most interesting, but limited space on this page prevents a complete portrayal of it. However, a brief résumé of the principal benefactors should be reviewed here. In addition to the contribution of the Kress Foundation, friends of the university living in the Greater Kansas City area have contributed \$135,751. Mrs. E. H. Hashinger gave \$100,000 for the Battenfeld Auditorium as a memorial to her son, J. R. Battenfeld, Jr. Friends of Dr. C. B. Francisco have contributed \$30,554 as a memorial to him. About \$60,000 has accumulated from student union dues, earnings of the book store, and contributions to a student union building, an endeavor which started back in about 1943. The alumni of the medical school and the doctors of Kansas have contributed another \$26,000. The Endowment Association of the university has loaned the building fund \$50,000. At this writing, these funds are available to finish construction on this building (about February 1, 1954) and to partly equip it. Another \$60,000 is urgently needed to fully equip this building so that the maximum return in the form of usage and satisfaction can be realized by those who have been so generous in the interests of medical education in Kansas.

I believe that the quality of medical practice can well be judged by the quality and facilities for medical education in that state. The Kansas legislature has had the foresight to furnish these facilities at an undergraduate level. The aforementioned benefactors have been most generous in their support of the construction of this building which will not only enhance the pre-existing facilities as far as medical students are concerned but will also furnish a center for continued study for the doctors of Kansas and the United States. Is it not our responsibility to be generous in our contributions to carry this facility to its completion?

A handwritten signature in cursive script, reading "Lucien R. Pyle". The signature is written in dark ink and is positioned at the bottom of the page, below the main body of text.

## EDITORIAL COMMENT

### KANSAS CIVIL DEFENSE ACT

The fourth in a series of editorials on legal subjects is devoted to the Kansas Civil Defense Act. This was passed in 1951 following considerable pressure from national sources because it was felt that the machinery for creating civil defense boards should exist in each state. It was also necessary to provide for inter-state co-operation in civil defense, both of which are accomplished by this act. It appears, for those interested in studying the subject further, in the 1951 supplement to the General Statutes of Kansas, 1949, and repeals certain pre-existing sections and rewrites the act into new sections 901 through 918.

The act begins with an expression of policy. "(a) Because of the existing and increasing possibility of the occurrence of disasters or emergencies of unprecedented size and destructiveness resulting from enemy attack, sabotage or other hostile action, and in order to insure that preparations of this state will be adequate to deal with such disasters or emergencies, and generally to provide for the common defense and to protect the public peace, health, and safety, and to preserve the lives and property of the people of the state, it is hereby found and declared to be necessary: (1) To create a state civil defense agency, and to authorize the creation of local organizations for civil defense in the political subdivisions of the state. (2) To provide for the rendering of mutual aid among the political subdivisions of the state, and with other states, and to co-operate with the federal government with respect to the carrying out of civil defense functions. (b) To authorize the establishment of such organizations and the taking of such steps as are necessary and appropriate to carry out the provisions of this act."

This act establishes the governor of the state as head of civil defense for Kansas and empowers him to employ a director of civil defense. He also may appoint a civil defense council and make available, when an emergency arises, any offices or officials of the state. It further permits counties of more than 175,000 population to levy a half mill tax in addition to all other levies for the purpose of civil defense and establishes that mutual aid arrangements may be made among the several counties.

The state civil defense council is authorized to accept services, gifts, grants, and loans from the federal government or from any private person or organization, to be used in time of disaster. The

council is further empowered to requisition any property presently owned by the state or any of its political subdivisions and to transfer personnel for service in civil defense, should this be deemed necessary for the public interest and safety. There are provisions, of course, whereby contracts shall be entered into in such transfers, and that expendable materials shall be paid for or replaced according to prior agreement, and that personnel on loan for civil defense work shall do so only for the duration of the emergency.

A considerable portion of the act concerns personnel. One requirement is that no person may serve in any capacity in any civil defense organization who "advocates a change by force or violence in the constitutional form of the government of the United States or in this state or the overthrow of any government in the United States by force or violence, or who has been convicted of or is under indictment or information charging any subversive act against the United States."

There is also a section dealing with immunity from liability. It states that an individual who is injured or who suffers loss as a result of his activity in line of civil defense duty may recover benefits or compensation to which he would otherwise be entitled under Workmen's Compensation, any pension law, or any act of Congress, but, except for that, neither the state of Kansas, any of its political subdivisions, nor any individual serving therein may be held liable "for personal injury or property damage sustained by any person appointed or acting as a volunteer civil defense worker, or member of any agency engaged in civil defense activity." The only exception is for gross negligence, willful misconduct, or bad faith. This section goes to some length to flatly deny liability for any person in case of death or injury or damage to property as long as the person causing such injury has "complied with or reasonably attempted to comply with this act . . . during the existence of such emergency or grave public disaster."

In general, the act permits the governor to proclaim an emergency because of war, accidental or natural disaster. He may command the resources of the state in the interest of public health and safety and, as long as the emergency is declared to exist, the state is ruled under martial law. Even though the act attempts to define all possible emergencies, it is left open at the close by declaring that the civil defense director, who is responsible for all procedures under this act, may have whatever additional duties and responsibilities as may be prescribed by the governor or the council.



## AN INTERPRETATION OF CIVIL DEFENSE

Civil defense is a game of cops and robbers. Grown men and women under tin hats playing hide and seek with an imaginary enemy, simulating monstrous disasters, rescuing an astronomical list of injured, assuming unbelievable authority, requisitioning everything in sight, running, screaming in the happy terror of comic book melodramas.

Until disaster strikes. Then the game with wooden swords pays off. The giddy dance sombers into black reality and a battle for survival—man's effort to save mankind. Then the party hours are transformed into experience teaching the actor lines he must recite upon the stage. Then he is prepared to take whatever comes upon him.

So, however scornful the cynic feels toward the exhilarated shipping clerk turned fire warden, let him play his little game. Let him learn his role of safety against such day, which God forbid shall ever dawn upon this nation, when his toys become instruments of salvation and his knowledge essential for survival.

For the doctor this is different. He isn't playing now, he won't play then. His service will be the same as it is today, but covering a wider field. Need for his skill will multiply a thousand fold. A Herculean task awaits him in which the luxuries of medical care must be discarded for essential work. Shortages will be magnified in personnel and material and in facilities. Handicaps of every description will plague him in an ever rising crescendo of abject and desperate need.

But he will be practicing medicine. The leisurely physical examination will be replaced by the fast excising of foreign material. The friendly advice on diet is put aside for an essential transfusion. History taking is discarded for a hasty x on the patient's forehead marking what has been done. Things will change in one fateful instant, but for the doctor this is a change in emphasis only.

If this happens, he must depend upon the aid of volunteer helpers, filling station attendants, truck drivers, fountain clerks, stenographers to perform the work of his skilled assistants. There is no time for training or for advice when the need arises. They must be ready now, so let them play at cops and robbers, learning what they may of first aid and disaster rescue during recreation periods against an hour when they might be needed.

So civil defense is not a game at all, but, instead, a deadly serious school to teach survival to a nation. It represents the final link between the civilian population and the armed forces, welded together into a chain of total defense. It is the people themselves learning to confront disaster, and, as such, no single hour of preparation can be said to be

wasted even if happily the lessons learned are never needed.

And there also medical organization is essential. It would not be enough for the physician to be prepared to serve. He must be informed where he is needed and what duties he shall be expected to perform. Supplies in undreamed of amounts must be available for his use. Facilities must be prepared.

So this issue of the JOURNAL is devoted to the subject of medical organization in civilian defense. It outlines recommended procedures which may well be modified according to various local situations but should be followed in the main to bring cohesion to the larger defense program.

And, finally, even though the prospect of need arising through enemy action is the hue and cry, a moment of sober reflection will convince each doctor that this outline can be made to serve in other ways. Local applications will conserve time and spare the maddening inefficiency of unpreparedness in case of disaster occasioned by natural or accidental causes. Actually, it is this service that presents an immediate practical aspect to such organization and represents the principal reason for devoting this issue of the JOURNAL to the subject.

If a tornado or an explosion struck any city in this state, even a relatively small number of casualties would quickly overtax existing medical services. An appeal for aid would bring neighboring physicians of course, and, trained as they are to cope with emergencies, each would soon put his knowledge to effective use. But even this delay is unnecessary. With a small amount of organizational planning at this time the doctor does not need periods of practice. He needs only to accept an assignment. He needs to be made part of a team that can serve as a disaster unit. He will be more efficient, for whatever emergency duty he is asked to perform, if he is a member of an organized staff, if his partners in this effort represent the various specialized medical services.

So the plan is simple. Each sizable community should organize its own unit which would be prepared to move intact to any needed area. Smaller places may best group together. Today the plan is for a program to be placed on paper so that the blueprint may be used when occasion demands. It is that simple, but it is of utmost importance.

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## OUR DEBT

It has been recognized for many years that the tuition paid by the medical student is far short of the total expense necessary to prepare him for the practice of medicine. This deficit has had to be made up from other sources of income. Every graduate of

medicine should feel grateful that as a candidate for medical education he had the good fortune to be accepted by some medical school. As a medical embryo he was nurtured, developed, and taught the fine arts of the profession, qualifying him and finally conferring upon him the priceless degree of Doctor of Medicine.

However, he has not paid the full price of his medical education. There is still a responsibility for him to step forward and in a small way make it possible for the medical students of today to have the advantages of better education and better physical facilities than were offered to him. One should, of course, give financial assistance to the school of his birth, but there is also an obligation to the school of his adoption. We have enjoyed the practice of medicine in Kansas. Kansas is not my school by birth, but is my school by adoption.

Kansas medicine has accomplished great things. The Student Medical Union Building, Kansas City, is nearing completion. There is still some obligation to be met in the completion and furnishing of the same. It will be possible there to carry on more adequately, graduate as well as postgraduate studies. This new Kansas Medical Student Union Postgraduate Continuation Study Building will be dedicated to the students of medicine.

It is necessary for the profession of Kansas to assist in this very worthwhile project. The Endowment Committee is appealing to you to assist this project in this school of your birth as well as this school of your adoption.

*J. W. Randell, M.D., Marysville  
Chairman, Committee on Endowment*

To supplement Dr. Randell's summary of the physician's obligation to contribute, the JOURNAL

presents practical facts and figures to show the necessity for accumulating funds in Kansas and the uses to which they will be put. The information was assembled by Mr. Irvin E. Youngberg, executive secretary of the Kansas University Endowment Association. His balance sheet shows that funds have been accumulated through memorial contributions, student fees, grants, gifts from individuals, and income from investments.

The first memorial fund was established in the name of the late Dr. C. B. Francisco, who was especially active in the early part of the financial campaign. After his death in 1944, it was decided that the library and reading room in the new building should be dedicated as the Dr. C. B. Francisco Memorial Room.

A second memorial fund was originated by Mrs. E. H. Hashinger, who gave \$100,000 through the Battenfeld Foundation as a memorial to her late son, Jesse R. Battenfeld, Jr. That contribution was marked for the Jesse R. Battenfeld, Jr., Memorial Auditorium in the new building.

Although there are no union building facilities at the medical center, all students there during the past four years have paid student union fees. In accordance with the statutes of Kansas, the full amount of those fees must be used for building and equipment until they are fully paid for.

The postgraduate program in medicine at the medical center was given impetus when the Kress Foundation gave \$150,000 for the erection of a Continuation Study Building with the provision that the fund be matched by local contributors. Business firms and professional men of Greater Kansas City gave \$135,750.95 to accomplish this end, and the Kansas University Endowment Association added \$30,000 from its unrestricted funds for this purpose.

## SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

John C. Artman, M.D.  
2005 Lincoln Drive  
Hays, Kansas

Laurel G. Case, M.D.  
316 South Factory Street  
Enterprise, Kansas

Thomas W. Critchfield, M.D.  
4509 West 74th Place  
Mission, Kansas

William T. Holland, M.D.  
Winter VA Hospital  
Topeka, Kansas

William J. Kridelbaugh, M.D.  
Route 4, Radio Lane  
Arkansas City, Kansas

James G. Lee, Jr., M.D.  
731 Ann Avenue  
Kansas City, Kansas

Hampton W. Shirer, M.D.  
5321 West 50th Street  
Mission, Kansas



All of the above contributions have been made to the Kansas University Endowment Association, which serves as trustee. The association invests the funds in short term government securities, making no administrative charge for the service. Income from the investments is added to the fund.

The following summary shows the status of the fund at present:

Battenfeld Foundation—Contributions .....	\$100,000.00
Continuation Study Center—	
Student Union Fund .....	
Doctors' Contributions to date .....	26,040.16
Dr. C. B. Francisco Fund—Contributions ..	30,554.05
Special Fund—Kress and	
Kansas City Contributions .....	315,750.95
Medical Student Union Building Fund—	
Contributions .....	45,642.20
Student Fees .....	10,016.00
Income Earned to date .....	15,779.08
Loans From Kansas University	
Endowment Association .....	50,000.00
<hr/>	
Total Available to date .....	\$593,782.44
Expenditures to date .....	343,672.69
<hr/>	
Cash (and Securities) on Hand .....	\$250,109.75
Plus: Doctors' Pledges .....	2,200.00
<hr/>	
	\$252,309.75
Construction Costs .....	\$538,788.68
Paid to date .....	342,645.19
<hr/>	
Balance to be paid for Construction .....	196,143.49
<hr/>	
Balance on Hand for Furnishings, Con-	
tingencies and Additional Change Orders	\$ 56,166.26

Furnishings and equipment needs approximate \$100,000, with about one-half allocated for the purchase of kitchen and dining room equipment. Kansas physicians are now being asked to contribute, and generosity may be encouraged by the fact that all gifts are deductible with respect to Kansas and federal income taxes. Special recognition will be given all who contribute \$500 or more. A study of the endowment association records shows that 22 per cent of the physicians in the state have already made gifts to the fund, and it is hoped that the remaining 78 per cent will add their names to the list of contributors.

## ARMED FORCES REQUIREMENTS

A September 2 report from the National Advisory Committee to Selective Service, stating a belief that there will be no further calls for physicians registered under the doctor draft for about a year, was welcomed by physicians throughout the country.

The report adds: "As a result of Call No. 16 in August (for 524 physicians) and the increased number of volunteers, there have been commissioned a

sufficient number of physicians to meet the needs of the armed forces for the immediate future. Those who have been commissioned from either the voluntary list or the Selective Service call will be brought to active duty from time to time until this reservoir is exhausted."

In summing up the situation, however, the *Journal of the American Medical Association* of September 5 carried an editorial criticizing the Selective Service System for refusing to cancel the August call for 524 physicians. The editorial stressed the fact that the number of physicians who have volunteered for active duty now far exceeds present medical officer requirements. Five long-range effects which will result from an excessive number of medical officers were listed as follows:

1. A wastage of medical manpower resulting in a reduction in the number of physicians available to care for the civilian population.
2. A tendency to use excess medical officers on nonmilitary assignments.
3. A squandering of available medical registrants under the "Doctor-Draft law" which would accelerate the call-up of doctors in priorities 3 and 4.
4. An inefficient utilization of physicians in uniform, with a resulting lowering of morale and general dissatisfaction with military service.
5. A nullification of the newly established ratio of 3.0 per thousand between medical and over-all troop strength.

The editorial presented the viewpoint of many physicians and communities as follows: "Acting in good faith and on the basis of the assertions by officials in Washington that medical personnel was sorely needed, many of these men have closed their offices or have discontinued their plans for additional residency or postgraduate training. In many instances this discontinuance of training was forced on them because of the prohibition that prevented hospitals from accepting priority 1 and 2 men to fill available residency vacancies.

"Having terminated their civilian commitments on the assumption that they were needed immediately by the armed forces, these physicians are now faced with the prospect of an indefinite status for the next year or more. Possibly it is still not too late for many of them to change their plans, to request a delay in call to active duty, and resume their civilian occupations.

"The government officials charged with the administration of the 'Doctor-Draft law' are obligated to call to active duty only those physicians who are needed and immediately to advise medical reservists as well as Selective Service medical registrants when they can expect to be called for military service."

## BLUE SHIELD

### KEEPING PEOPLE INFORMED

The problem of how much and what kind of printed matter should be used by Blue Cross and Blue Shield is one which always presents a challenge. Does the public like to see new and fresh material, or does it tire of it? Is enough money spent on this kind of publicity, or should the amount be increased? These are questions not easily answered. The Public Relations Division of the Kansas Plans tries to maintain public interest without too much repetition.

In an effort to keep in constant touch with the sponsors and users of Blue Cross-Blue Shield, the monthly publication *Health Plan* is sent to four different groups. This is sent to doctors, hospitals, member council representatives, and group leaders, with a slight difference in the content of the inside pages, designed to be of particular interest to each group. Being the principal method of communication between the Blue Cross-Blue Shield staff and the medical profession, it merits the continued interest and attention of Kansas doctors. These pages contain stories of the activities of the medical society, the medical auxiliary, the medical assistants and the Blue Shield Relations Committees. This offers a convenient way for the Kansas doctor to keep in touch with the development and progress of Blue Cross-Blue Shield. A quarterly edition of *Health Plan* is sent to all direct pay members. These are members who have joined during a community enrollment or have transferred out of an employee group. Thus the communication reaches or is made available to nearly the entire Kansas enrollment.

The newest piece of literature to reach the desk of the Kansas participating physician is "The Tearful Tale of the Other Fellow," a small descriptive folder with a detachable card which can be mailed to the central office for information regarding membership, or group formation. A small supply will be mailed to each physician, and additional copies will be sent on request. Placed on the receptionist's desk in the outer office, they offer patients a chance to examine the possibilities of membership in the two plans.

A second leaflet will soon be mailed—only two copies to an office. This is designed to answer questions concerning the patient's coverage under the plans and will be given to him on entering the hospital for treatment. General information, with answers to 50 questions commonly asked, will save the doctor's time and give the patient an idea of what he can expect in the way of service from

his Blue Cross-Blue Shield membership. He can also become aware of the relationship between the dues he pays and the costs of hospital, surgical, and medical service. When he understands their dependence on each other, he may be less willing to use more of the services than absolutely necessary, thus eliminating the possibility of increased rates.

Another item recently mailed was a participating physician plaque and desk card. These should serve as a reminder to the patient to tell the office assistant that he has membership in Blue Shield.

During the years, numerous different kinds of literature have been mailed to members in the form of stuffers in monthly statements and in notices of payment. Quarterly posters are placed in hospital lobbies and folders distributed during enrollment campaigns. Advertising by newspaper, radio, and magazine is conducted through most of the year, but particularly during enrollments.

A practical demonstration of the value of direct mail advertising is the satisfactory result of the recent offering of an extended benefits rider to the existing contract. A concentrated mail campaign within a two-week period resulted in approximately 175,000 members enrolling in this added service. Protection is assured to \$5,000 in each service against the cost of treatment for poliomyelitis and certain other stated diseases, or a total of \$10,000 which could be available for each member of the family who is covered.

Since total income of the plans is a major factor in determining how much should be spent, it is interesting to know that the present cost of this kind of public relations project (printed matter) represents an expenditure of less than 1 per cent of Blue Cross-Blue Shield income.

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"Americans can expect to add four or five years to their average length of life during the next 20 or 25 years," said Dr. Louis I. Dublin, consultant to the Institute of Life Insurance, recently.

"During the past half-century, life expectation at birth has jumped from about 49 years to the present 69 years. That was in large part the result of great reductions in mortality among infants, children, and young adults. Longevity at middle ages and at advanced ages has not gained materially in the recent past. But today, with research concentrated on the ills which beset later life, there should be material advances in the years ahead in life expectancy in mid-life and later."

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The 95th annual meeting of the Kansas Medical Society will be held at Topeka, May 2-6, 1954.



# Clinical Pathological Conference\*

## CASE PRESENTATION

Dr. John Christianson (resident in medicine): This 42-year-old obese colored female was first seen in the emergency room of the University of Kansas Medical Center on April 26, 1953, and expired April 27, 1953. The chief complaint was an attack of asthma for six hours.

The patient developed this asthmatic attack about noon. The attack became progressively worse, and the patient came to the emergency room for treatment at 7:10 p. m. She gave a history of seasonal asthma for 15 years. The family history is unknown.

When first seen, the patient had severe dyspnea and a wheezing respiration, with short inspiratory phase and prolonged expiratory phase. Blood pressure was 120/70, pulse 100. Two minims of adrenalin were given at 7:15 p. m. and repeated at 7:35 p. m., with little effect. At 8:00 p. m., 7½ grains of aminophylline were given intravenously, with some relief. This was repeated at 9:00 p. m., with almost total relief of symptoms. There still were a few expiratory high-pitched wheezes posteriorly.

The patient was released from the emergency room essentially clear at 11:00 p. m.

The patient was readmitted to the emergency room at 4:25 a. m. on April 27, 1953, in a severe asthmatic attack which started about 2:00 a. m. Chest examination was the same as on the previous admission. Two minims of adrenalin were administered at 4:27 a. m. Oxygen by mask was administered, at a rate of eight liters a minute. Adrenalin ½ cc. was given at 4:46 a. m. Aminophylline grains 7½ intravenously was given at 5:00 a. m. Sodium phenobarbital grains 1½ was given intramuscularly at 5:30 a. m.

In spite of therapy the patient continued to have great respiratory difficulty. She was extremely restless and fought the oxygen mask. She then began to show signs of stupor. At 6:25 a. m., 200 mgm. of cortisone was given intramuscularly in the buttocks in divided doses.

Blood pressure was unobtainable at 6:45 a. m. Femoral and radial pulse was unobtainable. The lungs were essentially clear anteriorly. The patient was unconscious. Tracheal suction obtained little secretion. The patient was placed in shock position, and a vein was exposed surgically at 7:20 a. m. Twenty mgm. ACTH in 500 cc. of five per cent glucose in water was started at 60 drops per minute.

Two cc. nor-epinephrine in 500 cc. of five per cent glucose in water was added and flow reduced to 30 drops per minute.

At 8:00 a. m., no radial pulse was obtainable in either arm. Femoral pulse obtained at 8:30 a. m. was fairly strong—rate 136/minute. An electrocardiograph was done.

At 8:50 a. m. the patient was transferred to a bed and moved to the ward, with continuing intravenous medication. At 9:05 a. m. the patient vomited. Respirations and respiratory effort ceased immediately.

Large amounts of vomitus were suctioned from the pharynx. Two cc. adrenalin and 1½ cc. coramine were administered intracardially. The patient was pronounced dead at 9:10 a. m.

Dr. Mahlon Delp, chairman: Any questions of Dr. Christianson?

Q: At any time during her hospital course did this patient produce any sputum?

Dr. Christianson: No.

Q: What was the character of the vomitus?

Dr. Christianson: It was gastric contents.

Q: Was she cyanotic at any time?

Dr. Christianson: It was difficult to determine. I think she was quite cyanotic, from the appearance of the fingernails.

Q: How long was the oxygen kept on?

Dr. Christianson: From the time it was started, at about 4:30 a. m., until time of death. We tried to cut off the oxygen periodically. It was given continuously when the cyanosis became more marked.

Q: Was an x-ray made?

Dr. Christianson: No.

Q: Was respiration thoracic or only abdominal?

Dr. Christianson: She was using her chest muscles for respiration. There was some in-drawing.

Q: Did you say the vomiting was agonal vomiting?

Dr. Christianson: It depends upon how you interpret the word "agonal." Yes, I would say the vomiting was agonal.

Dr. Delp: Do you think the respiratory excursions ceased simultaneously with the vomiting?

Dr. Christianson: I think the patient vomited, and then respirations ceased immediately.

Dr. Delp: You make a point of the fact that the patient had no visible respiratory excursions following the vomiting? No additional effort?

Dr. Christianson: That's right.

Q: What was the nature of the respiratory excursions before the vomiting?

\* From the University of Kansas Medical Center. Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the Departments of Medicine and Pathology and the junior and senior classes of medical students.

Dr. Christianson: They were shallow, but they were evidently adequate.

Q: Did you auscultate her chest?

Dr. Christianson: It was clear anteriorly upon arrival at the ward.

Q: How much did this patient weigh?

Dr. Christianson: About 160 pounds.

Dr. Delp: Did you have any particular reason for taking the EKG?

Dr. Christianson: Yes. I couldn't understand why I couldn't get the radial pulse or the blood pressure, and yet I could faintly hear heartbeats.

Dr. Delp: Mr. Manning, you have the EKG, I believe.

Mr. Robert Manning (senior student): The rate is regular with tachycardia of approximately 150. The auricular conduction was normal with P waves preceding each ventricular complex. Therefore, this is a sinus tachycardia. The Q-T interval is shortened but, when corrected for the tachycardia, it is within normal limits. The P-R interval is prolonged mainly because of the large P complex. QRS complex appears normal, and the T vector itself is located almost perpendicular ( $-90^\circ$ ) to the coronal plane, so you don't see much T wave deflection on the chest leads. The QRS vector is perpendicular to lead aVI (about plus  $60^\circ$ ) and is directed anteriorly so that the main findings are the rotation of the QRS and T vectors with wide QRS-T angle and the large P waves. These findings are consistent with acute right ventricular strain.

Dr. Delp: You can see the EKG, Dr. Gunn. Does it appear to suggest any acute myocardial condition?

Dr. C. G. Gunn (resident in medicine): No, there is nothing there that suggests heart disease.

Dr. Delp: There was nothing in this patient's history or appearance that suggested heart disease to you, Dr. Christianson?

Dr. Christianson: I needed any help I could get.

Dr. Delp: Were you considering a pulmonary embolus or pulmonary infarct?

Dr. Christianson: No.

Dr. Delp: It would seem that this patient had bronchial asthma in a severe form in the past. That is not the answer to the responsibility and obligation we have in this academic exercise because patients don't often die of bronchial asthma, and so we have to offer some other explanation for this patient's death.

I don't mean the immediate, obvious thing that occurred at the bedside just prior to the patient's death. I think we still have to explain the patient's clinical appearance, especially after the last time she came to the emergency room—the peculiar cardiovascular collapse or shock state that she manifested.

Miss Shiney, may we have your differential diagnosis?

# DIFFERENTIAL DIAGNOSIS

Miss Margaret Shiney (senior student): Today we are confronted with the case of a 42-year-old woman having a history of seasonal asthma and a terminal episode consisting of about 18 hours of relatively intractable dyspnea, wheezing, and cyanosis.

Since the symptoms were typically asthmatic, I believe the differential diagnosis must consist of both asthma and conditions simulating asthma. The four categories of conditions simulating asthma are respiratory disease, circulatory disease, renal disease, and nervous system disease.

In diseases of the respiratory system are included pharyngeal disease, including such things as spasm, edema, paralysis, inflammation, stenosis, the presence of a foreign body, and neoplasms.

Tracheobronchial disease which may cause asthmatic-like symptoms includes intrinsic lesions such as acute and chronic bronchitis, chronic inflammatory disease such as bronchiectasis, tuberculosis, syphilis, foreign bodies, and neoplasms. We must think also of the extrinsic lesions such as substernal thyroid enlargement, aneurysm of the thoracic aorta, tuberculosis of the tracheobronchial nodes, and mediastinal neoplasm.

We must consider also parenchymal pulmonary diseases. The most important of these are the inflammatory diseases such as pneumonia, tuberculosis, and pneumoconiosis. We must consider idiopathic pulmonary emphysema, neoplasm of the lung parenchyma or pleura, and things producing external pressure, such as pneumothorax or hydrothorax.

Among circulatory causes for asthmatic-like attacks, the most common is cardiac decompensation.

However, I feel that this case is to be explained solely on the basis of true asthma. There is a history of seasonal asthma present at least since the age of 27. On this basis alone, I think that we can make the diagnosis of atopic asthma. But because status asthmaticus is rare in this condition and because atopic asthma typically becomes less severe with age, I believe we must postulate another disease process which is either inflammatory and infectious or which is very debilitating.

It is possible also that the patient's extrinsic asthma—atopic asthma—was complicated by the intrinsic type which has numerous causes, including somatic and psychic conditions, primary emphysema, and neoplasms. It is not possible to rule out most of the causes from the information we have.

However, working on the principle that the simplest diagnosis probably is the best, my final diagnosis is atopic asthma complicated by some unknown disease which is infectious or debilitating. I believe that the patient went into shock from anoxia which was caused not only by the asthma but also



by some other disease which must have been present in the thorax.

Dr. Delp: I'd like to have you state some infectious diseases that might have existed, or offer us a better explanation.

Miss Shiney: I can't offer a better explanation. I can think of coexisting pneumonia, coexisting tuberculosis, and atelectasis. I can think of any number of things it might have been.

Dr. Delp: Could you offer any metabolic explanation for a shock state such as this patient had?

Miss Shiney: It is feasible that the adrenal cortex had been depleted. I don't have any reason for thinking it. I know that she was anoxic to the point of circulatory collapse, and therefore I feel safer in suggesting that her circulatory collapse was due to anoxia.

Dr. Delp: I think you heard Dr. Christianson say this patient received oxygen almost continuously for a period of 4½ hours. He tried to interrupt it, and that did not work. Then he said the patient became comatose. Does that suggest anything to you?

Miss Shiney: It is possible that by giving her oxygen we removed the only stimulus the respiratory system had. Actually, hypoxia stimulates the respiratory system, and oxygen in excess might remove one valuable stimulating mechanism with resultant slowing of the respiratory rhythm and carbon dioxide retention. This situation could result in fatality.

Dr. Delp: Are there any comments?

Dr. T. K. Lin (instructor in medicine): Did the heart beats stop with the vomiting?

Dr. Christianson: No, the heart continued for a few minutes after the vomiting.

Dr. Delp: I'd like to alter our routine just a little today and have the pathologists tell us what they found in this case. We will discuss it further after that.

Does anyone have a diagnosis he would like to make now?

#### PATHOLOGY REPORT

Dr. J. K. Frenkel (assistant professor of pathology): When the body was opened, the lungs were found to be large and voluminous, filling the chest cavity completely, in contrast to the tendency of normal lungs to collapse after opening of the chest. Although some pleural adhesions were present, failure of the lungs to collapse was due principally to a large amount of trapped air.

Sections showed marked diffuse emphysema. The trachea and main stem bronchi contained aspirated gastric contents. The smaller bronchi contained thick, tenacious, yellowish mucoid exudate.

Microscopically, the presence of a recent purulent exudate was confirmed. In the exudate as well as in

the bronchiolar mucosa, eosinophile granulocytes and mononuclear cells were numerous. Hyaline degeneration of the basement membrane of the bronchial mucosa was present, reaching up to 50 microns in thickness.

The clinical diagnosis of chronic bronchial asthma was therefore fully confirmed, with a predominance of emphysematous alveoli and a lack of atelectasis. Some fibrosis of the pulmonary parenchyma was present, however.

The lungs weighed 250 grams on the right and 220 grams on the left. The heart was slightly en-

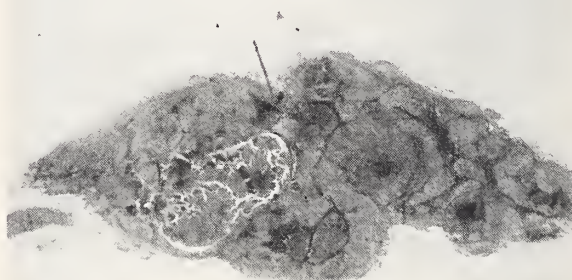


Figure 1. Cross sectional view of adrenal gland showing generalized nodularity due to granuloma formation and necrosis (magnification 4.5x). Shown on Figure 2, an enlargement of area near arrow.

larged (350 grams), the enlargement being equally on the right and on the left, and there was no clear-cut cor pulmonale.

The unexpected anatomical findings were in the adrenal glands, which showed marked nodularity associated with necrosis (Figure 1). Together they

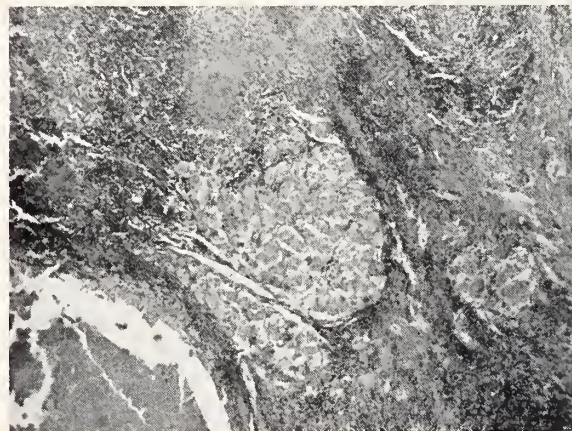


Figure 2. Low power of area near arrow on Figure 1, showing a group of hyperplastic cortical cells, the only cortical cells in this section (center). Granulomatous inflammation is present peripherally; necrosis is shown in the left lower corner and top center.



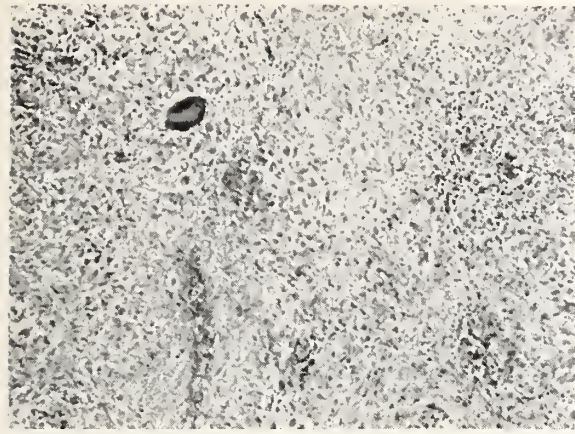


Figure 3. High power view of epithelioid reaction with giant cell and necrosis (granulomatous inflammation).

weighed 15 grams, which is slightly more than average. Most of each gland had a granulomatous inflammatory process characterized by epithelioid cells, formations of tuberculoid giant cells accompanied by necrosis (Figure 3), and the presence of acid-fast bacilli. Very little cortical tissue remained; it appeared hyperplastic, and the cells were devoid of lipoid vacuoles (Figure 2). Recent tubercles also were present in liver and spleen, and a retroperitoneal lymph node showed granulomatous involvement with caseation necrosis. A scarred lesion was present in the apex of the left lung, suggestive of reinfection type tuberculosis.

The adrenal lesions appear to be of short duration, and necrosis of the adrenal gland probably occurred within a matter of weeks or months. We might speak here of clinically latent tuberculosis of the adrenal glands, since the clinical syndrome of Addison's disease was not apparent, unless the events of the last day could be interpreted as an Addisonian crisis. However, from secondary endocrine changes, there was evidence of adrenal cortical hypofunction. We found almost complete absence of the ACTH-secreting basophile cells in the pituitary gland. This finding is said to be commonly associated with Addison's disease; its genesis is obscure. A decrease in numbers of pituitary basophiles could result, after temporary accumulation of hormone material, from the dropping out of the target cells in the adrenal cortex.

Another indication of endocrine hypofunction was the presence of atrophic ovaries and of a flat and relatively aglandular endometrium. This, again, can be related to the sparseness of the pituitary basophiles which secrete the follicle stimulating hormone as well. These findings suggest endocrine hypofunction, persisting at least for a short time. Unfortunately, there was no history of weight loss, weakness, gastric irritability, or sensitivity to cold; nor could biochemical changes in blood and urine be deter-

mined. The patient was moderately obese, indicating that adrenocortical deficiency probably was not of long standing. There was no thymic enlargement (two grams) nor lymphoid hyperplasia, which occasionally accompany Addison's disease.

The occurrence together of bronchial asthma and adrenal insufficiency deserves special consideration. On one hand, due to adrenal insufficiency, the patient might be more sensitive to a stimulus initiating bronchial asthma; the attack ensuing thereafter might be more severe, due to lack of adrenocortical hormone. On the other hand, the stress of bronchial asthma and its associated bronchitis would be greater with relative adrenal insufficiency and might therefore push the patient into uncompensated adrenal insufficiency. We then have a vicious circle—one condition aggravating another.

As for the terminal incident: We mentioned the aspiration of gastric secretions which was observed at autopsy and corroborated by the history.

#### CLINICAL DISCUSSION

Dr. Delp: In Dr. Frenkel's remarks there are a couple of things we should explore. First of all, I think we should try to establish whether or not this fits into the definition of status asthmaticus. If so, what more successful management could be used?

Next, since the obvious destruction and damage to the adrenals has been established, I would like to hear some discussion as to whether or not there is a legitimate adrenal apoplexy or an acute adrenal insufficiency that might have a background in such a situation as Dr. Frenkel has demonstrated here.

I would like to ask Dr. Withers how he might have managed this patient if he thinks this clinically fits the diagnosis of status asthmaticus.

Dr. O. R. Withers (associate clinical professor of

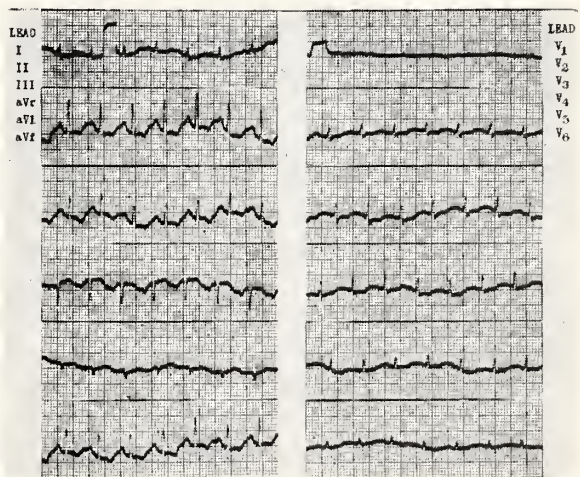


Figure 4. Sinus tachycardia, rate 150. Depression of the S-T segments in leads I, II, III, and aVF plus V2 through V6 could be associated with tachycardia or shock.



medicine): There's a very interesting thing about this case. In the first place, I doubt very much that this reaction the patient had in the lungs was a seasonal affair.

That type of individual rarely, if ever, goes into status asthmaticus. The history that the patient had asthma recurrently, just seasonally, does not agree with the pathology report showing very definitely that the asthma was on a chronic basis. And the patient had had it for several years, as shown by the fibrosis in her lungs.

Furthermore, I am inclined to believe that the adrenal insufficiency she had might have had something to do with the acuteness of her last attack.

Now, let's forget the pathology report. If this was due to a seasonal situation, the only thing that I think would throw her into an attack like this would be that she was extremely sensitive to certain allergens. I have seen it happen from aspirin.

A lot of these people take drugs before they are seen—somebody suggests this, and somebody suggests that. The patient then suffers from the toxic effects of drugs or from allergic reactions to drugs.

The second possibility is that some become adrenalin-fast, simulating a status asthmaticus. That is a broad term which means many things. In general, it means that everything you have given the patient has failed to cause a return of normal respiration.

In some cases, continuing to give adrenalin causes a paroxysm—a paradoxical effect. This could have been a factor here.

We didn't know about the adrenal gland insufficiency. As has been brought out, it's very likely that this is a possibility for lowered threshold for allergic reaction and also may have caused the attack to be more severe.

Dr. Delp: Dr. Bolinger?

Dr. Robert E. Bolinger (associate professor of medicine): Of course, we can say that this patient had adrenal insufficiency at the time the attending physician saw her, but probably it would have been a little difficult to make that diagnosis.

In a condition of severe stress, probably it is best to assume that the patient has a relative adrenal insufficiency, even in the presence of a normal adrenal gland. I think that is one situation we must consider in the patient in so-called "medical shock." This patient's terminal phase represents medical shock, with the drop in blood pressure and evidence of peripheral vascular collapse.

One thing that must be considered as a predisposing factor for this situation is a fulminating septicemia of some kind. How does a fulminating septicemia produce such a picture that frequently goes on to pulmonary edema and death?

One mechanism has been suggested, in the form of adrenal apoplexy. I don't know that the term "adrenal apoplexy" is particularly apropos. Certainly it is possible in a severe stress state, in severe infection, for a relative adrenal insufficiency to exist. It has been shown that the requirements for cortisone during such an infectious stress state may go up 10 to 20 fold, probably due to an increased metabolism of cortisone rather than to a lack of production. The insufficiency which then results could develop even without any disease of the adrenals. This patient might have had the same picture without any disease in the adrenals.

The adrenal can be stimulated only to a certain point. Thorn and his workers have shown that the response of the adrenals to ACTH follows a sigmoid type of curve which flattens off at the top; that if you give ACTH up to a certain amount, the response curve flattens off at the top. So there is a limit to the amount of the corticoids which the adrenals can put out. I think that when that limit is reached, as it frequently is in severe stress states, it would be quite reasonable to say that the patient had a relative adrenal insufficiency.

As far as "adrenal apoplexy" goes—I don't like that term. Apoplexy usually is applied to vascular accidents, and I think that if the adrenal were going into apoplexy as the result of overstimulation, it would do so as the result of our treatment more often than not, because we give ACTH in doses which far exceed the capacity of the adrenals to respond.

True apoplexy of the adrenals occurs in fulminating infections of the Waterhouse-Friderichsen type. There are some arguments about how those accidents come about. They can be explained on the basis of the actual effect of the infection on the adrenals.

One point remains in this case. The patient was given cortisone intramuscularly some 12 hours after admission, and also ACTH, which we can see now would not have caused any response. In the patient in an acute peripheral vascular collapse state, one should use an intravenous preparation—aqueous adrenal cortical extract. It shouldn't be given in a dose of one ampule; you ought to give ten ampules. The amount of cortisone contained in 100 cc. is very small, but it does have an effect, whereas intramuscular cortisone probably had no effect within a reasonable time limit.

Dr. Delp: Dr. Frenkel, from those sections, do you think this patient had a chance to recover, providing the asthma could have been controlled? Do you think those adrenals would ever have been functional again?

Dr. Frenkel: I doubt that the adrenals could have become functional again, since the tuberculous

process probably would have destroyed whatever adrenal tissue might have regenerated.

Perhaps a combination of antitubercular therapy covered by small replacement doses of cortisone could have been tried, had the diagnosis been known. I don't know what would have happened, since the tuberculous process would have been accentuated by larger doses of cortisone had the patient lived. Such large doses might have been necessary initially to maintain life.

I have just one comment about the effect of infection on the adrenal in causing "adrenal apoplexy." I believe that this is mediated through the pituitary-ACTH mechanism, with the infection providing the stress. Bacteria probably do not lodge in the adrenal gland in the Waterhouse-Friderichsen syndrome. In guinea pigs, "apoplexy" can be produced when diphtheria toxin is injected. Intense stress, or overadministration of ACTH, can cause dissolution of adrenocortical cells accompanied by hemorrhage. Hence, administration of ACTH to this patient would have been useless and might even have precipitated a crisis in an adrenal gland already under stress.

Actual involvement of the adrenal with microorganisms such as the tubercle bacillus, histoplasma, torula, toxoplasma, and others is more likely to lead to necrosis with karyorrhexis, sometimes associated with hemorrhage.

#### SUMMARY

Dr. Delp: Death in a given acute episode of bronchial asthma is uncommon but not rare. The combination of status asthmaticus with adrenocortical destruction due to active tuberculosis surely is unusual.

Cortisone given promptly to this patient might well have eliminated the paroxysm of asthma and prevented the profound and fatal cardiovascular collapse state. Long-term management of the patient then would have posed another problem.

#### FINAL DIAGNOSES

##### *Primary*

ASTHMA (history of asthma for 15 years and status asthmaticus for 6 hours before death).

CASEOUS TUBERCULOSIS OF BOTH ADRENAL GLANDS and of retroperitoneal lymph node near inferior vena cava.

MULTIPLE TUBERCLES OF LIVER AND SPLEEN.

Fibrous nodules of periphery of middle lobe of right lung and lower lobe of left lung, and fibrocaseous tracheobronchial lymph node.

Fibrous thickening of pleura and calcified subpleural nodule of apex of upper lobe of left lung.

Fibrous pleural adhesions of all lobes of both lungs.

Focal subendocardial hemorrhage of left ventricle.

Recent surgical wound of left forearm (history of exposure of vein for intravenous infusion 2 hours before death).

Multiple recent puncture wounds of both arms (history of multiple intravenous and intramuscular injections for 4 hours before death).

Aspiration of gastric contents into trachea and main bronchi, recent.

##### *Accessory*

Arteriosclerosis of aorta and coronary arteries, slight.

Sclerosis of mitral valve, slight.

Fibrous pericardial adhesions.

Obesity, moderate (height 62 inches, weight 150 pounds).

Fatty metamorphosis of the liver, slight.

Fatty infiltration of myocardium, slight.

Chronic gastritis with congestion and focal hemorrhage.

Chronic salpingitis.

Fibrous peritoneal adhesions between omentum and abdominal wall, liver, spleen, diaphragm, gallbladder, and colon, and between loops of ileum in lower abdomen.

Atrophy of ovaries and uterus.

Chronic cervicitis.

Chronic vaginitis.

Oleogranulomas of the spleen.

Accessory spleen (1).

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#### ORIENTATION COURSE AT K.U.

An orientation course for freshman students at the University of Kansas School of Medicine was held this year for the first time. The course was given on the Lawrence campus during the third week of September, prior to the opening of regular classes.

A feature of the course was a banquet held on September 16, attended by the entire faculty of the medical school, all freshman students, and their wives. Speakers for the banquet program were Dr. Lucien R. Pyle, Topeka, president of the Kansas Medical Society, and Mr. Clarence G. Munns, Topeka.

Good public relations for the medical profession begins in the office of each individual physician.



### OSTEOPATHIC PRACTICE RIGHTS

During the final hours of the 1953 Kansas legislature, the following resolution was adopted by both houses, and a copy was subsequently sent to this office.

#### HOUSE CONCURRENT RESOLUTION NO. 29

A Concurrent Resolution providing for a study, report and recommendations relating to the practice of medicine and osteopathy in this state.

*Be it resolved by the House of Representatives of the State of Kansas, the Senate concurring therein:* The Kansas medical society and the Kansas osteopathic association are hereby requested to immediately proceed to evolve a permanent solution to the problems of licensure and practice rights of doctors of medicine and doctors of osteopathy in the state of Kansas and to present to the 1955 session of the Kansas legislature a proposed solution to these problems. Said osteopathic association and medical society shall have the full cooperation and assistance of all the state agencies in carrying on its study and in preparing its report.

*Be it further resolved,* That enrolled copies of this resolution shall be submitted to the chairman and secretary of the Kansas medical society and Kansas osteopathic association.

(Adopted by the House and the Senate)

On Thursday, May 7, the president of the Kansas Medical Society read to the House of Delegates the following resolution which he had received by mail during the annual session.

#### RESOLUTION BY THE KANSAS STATE OSTEOPATHIC ASSOCIATION

*Whereas*, the Kansas State Osteopathic Association recognizes the importance of Concurrent Resolution No. 29 passed by the 1953 Session of the Kansas Legislature relating to the permanent solution to the problems of licensure and practice rights of doctors of medicine and doctors of osteopathy in the state of Kansas, and

*Whereas*, the legislative resolution requested the Kansas State Osteopathic Association and the Kansas Medical Society to proceed to evolve a permanent solution to the problems of licensure and practice rights of doctors of medicine and doctors of osteopathy in the state of Kansas.

*Be It Therefore Resolved* that the Kansas State Osteopathic Association pledges itself to full cooperation with the Kansas Medical Society and with all interested state agencies in working out before 1955 a plan for permanent solution to the problems of licensure and practice rights of doctors of medi-

cine and doctors of osteopathy in the state of Kansas to be offered to the 1955 session of the Kansas Legislature for its study and action.

Adopted by the Kansas State Osteopathic Association this 26th day of April, 1953.

(Signed) Lloyd L. Hall

Executive Secretary, K. S. O. A.

(Corporate Seal of The Kansas State Osteopathic Association)

After some discussion the House of Delegates decided the basic principles upon which the future course of this Society should be directed and then authorized the Council to draft a reply. Correspondence upon this subject was carried on with the Council during the summer and, on September 4, 1953, the following letter was sent by L. R. Pyle, M.D., president of the Kansas Medical Society, to the president of the Kansas State Osteopathic Association.

#### REPLY BY THE KANSAS MEDICAL SOCIETY

E. A. Rindt, D.O., President  
Kansas State Osteopathic Association  
Garlinghouse Building  
Topeka, Kansas  
Dear Doctor Rindt:

We wish to acknowledge receipt of the resolution adopted by the Kansas State Osteopathic Association relative to practice privileges in Kansas. This was read before the House of Delegates of The Kansas Medical Society and discussed at some length.

If this resolution was correctly interpreted by The Kansas Medical Society, we are in accord with all portions except in one relatively minor instance which, we recognize, was taken from the resolution adopted by the Kansas Legislature. This suggests the need for a "permanent solution to the problems of licensure and practice rights of doctors of medicine. . . ."

There exist certain statutory problems relative to licensing doctors of medicine which result from the fact that the medical practice act has not been amended substantially during the past 40 years. Statutory educational requirements for the practice of medicine and surgery are below those currently in force on the basis of regulations adopted by the Kansas State Board of Medical Registration and Examination. Existing standards might well be classified into the medical practice act statute but since these are already operative under board regulations, none of which exact less than the law, we do not believe there is laxity in the present situation.

The principal difference of opinion between the doctors of medicine and the authors of your resolution, as expressed by our House of Delegates, concerns the statement that the practice rights of

doctors of medicine require a "permanent solution."

If a practical and equitable means might be devised to govern the practice of medicine and surgery which would afford adequate protection for the public against unqualified practitioners, then there would be no essential disagreement even on this point.

We are sure your association will agree that laws governing the practice of the healing arts exist for no purpose other than for the protection of the public. Certainly they should never operate for the benefit of any individual or group of practitioners. It is the opinion of The Kansas Medical Society that present statutes and regulations governing the practice of medicine and surgery in Kansas currently serve to offer protection for the public against inadequate and unskilled practitioners in these fields. While never eradicating the variation of talents and abilities, nevertheless they provide a minimum standard of educational experience. In the public interest we would not oppose any better way for raising statutory standards applicable to all healing groups and certainly no sincere association could conscientiously advocate lowering this protection.

During the many years osteopathy held to the beliefs of its founder and decried the use of drugs and the practice of operative surgery in the practice of healing, there was relatively little problem between our two professions as to the rights of practice. The controversy arose in recent years after the original concepts of osteopathy were discarded and osteopathic physicians began to want to use drugs and to practice operative surgery.

At that time the medical profession declared that educational requirements of the schools of osteopathy should be equivalent to those of medicine before their graduates might be licensed to practice in medicine and surgery. That continues to be the position of our society today.

We are certain you recognize the incongruity of adopting separate laws containing conflicting requirements to cover one subject. We are also certain that your association agrees with us that the highest educational standards must be maintained for public protection. Therefore, we endorse the principles expressed in the resolution you sent to us.

Press releases, especially your personal statement, as president of the Kansas State Osteopathic Association, arising out of your recent meeting in Kansas City, were of particular interest. Your remark that osteopathy would "settle for nothing less than unlimited practice rights. . . ." represents, we believe, a definite progressive step on the part of your association. We welcome this expression because we have always believed that any profession desiring to practice medicine and surgery should educationally qualify its members through basic and other training to engage in any phase of that practice.

The Kansas State Osteopathic Association has long contended that osteopathic educational requirements equaled those of the medical profession. The special resolution passed by the 1953 Kansas Legislature affords you the assistance of Kansas facilities in establishing the educational qualifications of your schools. As you know, it has long been our opinion that only after satisfactory evidence has been presented as to osteopathic educational standards in the fields of medicine and operative surgery could the State of Kansas justify the extension of such practice privileges to the members of your profession. We hope this is what you have in mind and, if so, we shall be happy to offer you assistance and to pledge our co-operation toward the end that such an evaluation may be accomplished speedily and in a fair and efficient manner.

Because of our sincere interest in a fair solution to your problems, we welcome the opportunity afforded the osteopathic profession in Kansas to present evidence in support of your position. We shall strive, as always, to prevent a compromise on standards of health care but if that question can be resolved as you apparently believe it can be, then I feel certain that no other important barrier to complete agreement between our associations will remain.

Sincerely,  
Lucien R. Pyle, M.D.  
President

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#### OKLAHOMA CITY CLINICAL SOCIETY

The Oklahoma City Clinical Society, which had its beginning in 1930, will open its 23rd annual four-day conference on October 26. A large attendance is expected since Oklahoma City, centrally located and easily accessible, is rated third in the nation as a convention city.

The program of postgraduate instruction will include lectures and discussions by 16 distinguished guest speakers from medical and teaching centers throughout the nation, in addition to presentations by Oklahoma physicians. Dr. Edward J. McCormick, president of the American Medical Association, will speak at a banquet meeting on October 26. There will also be daily luncheon round table sessions and a clinical pathologic conference. Entertainment will include dinner meetings, a dinner dance, and a stag smoker.

A complete list of speakers taking part in the program appeared in an advertisement on Page 450 of the September issue of the JOURNAL.

All physicians who are members of their respective county medical societies are invited to attend. A registration fee of \$20 will be charged, covering all features of the program.



## ACTIVITIES OF MEMBERS

Dr. William T. Sirridge, Kansas City, recently reported for duty with the Army Medical Corps. Commissioned as a captain, Dr. Sirridge is stationed at Fort Riley and is expecting to serve for a period of two years.

Dr. George B. Morrison, who has been practicing in Wichita since 1928, has announced his retirement from active practice, effective September 15. He plans to move to Nevada, Missouri.

Dr. Laurence G. Heins, Dr. Kenneth E. Conklin, and Dr. Laurel G. Case were three of eight who contributed toward the purchase of a McKesson anesthetic unit for the Dickinson County Memorial Hospital, Abilene. All are members of the Dickinson County Medical Society.

Dr. Grace Ketterman, who received an award as an outstanding intern at Menorah Hospital, Kansas City, Missouri, when she completed her work there recently, has accepted a position as assistant director of public health in Kansas City, Kansas.

Dr. Paul H. Wedin, Wichita, recently completed a two-months course in cardiac surgery at the Hahnemann Clinic, Philadelphia.

Dr. Orville S. Walters, who has been practicing in McPherson for the past eight years, has begun a two-year course as a fellow in the Menninger School of Psychiatry, Topeka. During his absence his practice in McPherson is being cared for by Dr. W. P. Hibbett.

Dr. D. V. Conwell and Dr. C. J. Kurth, Wichita, are co-authors of a paper, "Treatment of Mental Disorders in the Geriatrics Patient," published in the June issue of the *Journal of the American Geriatrics Society*. Dr. Conwell recently became a fellow of the American Psychiatric Society.

Dr. Arthur J. Revell, Topeka, was appointed last month to the Topeka-Shawnee County Advisory Board of Health to replace Dr. Ernest H. Decker, who resigned.

Dr. Charles H. Miller, Parsons, became a fellow of the International College of Surgeons at a meeting held in New York City last month.

Dr. Herbert C. Miller, chairman of the department of pediatrics at the University of Kansas

Medical Center, was recently appointed to an advisory committee to serve the Kansas Council for Children and Youth, under the jurisdiction of the State Department of Social Welfare.

Dr. Andre Baude, Topeka, received word last month that he had been named Kansas representative on the advisory board of the American Trudeau Society.

Dr. Joseph A. Budetti, Wichita, has been named an honorary member of the Tokyo chapter of the Otorhinolaryngological Society of Japan.

Dr. Alfred O'Donnell, Ellsworth, received a 50-year Masonic emblem at a meeting held in Ellsworth in August.

Dr. William J. Reals, Wichita, has been awarded a commendation ribbon by the U. S. Air Force for his aid in expanding medical services and in establishing a medical laboratory at the Sheppard Air Force Base, Wichita Falls, Texas.

Dr. William C. Menninger, Topeka, spoke on "Improving Understanding and Productivity through Human Relations" before the annual meeting of the National Association of Food Chains on September 29 at Chicago.

Dr. David L. Traylor, Emporia, gave the address to the graduating class at Newman Hospital School of Nursing, Emporia, last month.

Dr. A. M. Cherner, Hays, has completed a course of study in the use of radioactive isotopes and is now approved by the Atomic Energy Commission for using such isotopes at Hadley Hospital, Hays.

Dr. Frederic O. Epp, who has been practicing in Augusta for the past five years, has announced plans to open an office in Wichita about October 1.

Dr. Benjamin M. Matassarini, Wichita, was guest speaker at the September meeting of the Sedgwick County Medical Assistants' Society.

### STATUS OF GRIEVANCE COMMITTEES

A detailed report on county medical society grievance committees has been prepared by the A.M.A. Council on Medical Service to outline the organization, functions, and operations of 198 mediation committees throughout the country. In the study, societies were divided into groups according to size. Copies of the report are available from the Council on Medical Service.

### PEDIATRIC SOCIETY ORGANIZED

Thirty-five Kansas physicians became charter members of the Kansas State Pediatric Society at an organization meeting held at Emporia on September 19. Dr. Frank L. Menehan, Wichita, was elected president of the group. Dr. B. I. Krehbiel, Topeka, was chosen as vice-president, and Dr. David R. Davis, Emporia, was named secretary-treasurer.

A postgraduate course for pediatricians was the feature of the day-long program. Dr. Harold Palmer of Children's Hospital, Denver, presented two papers, "Hematologic Problems in Pediatric Practice" and "Jaundice in the Neonatal Period," and answered questions at a round table luncheon session. A social hour and banquet followed the scientific and business sessions.

### PSYCHIATRIC CONFERENCE IN TOPEKA

One of the 1953 regional conferences of the American Psychiatric Association will be held at the Menninger Foundation, Topeka, October 23 and 24, under the joint sponsorship of the Menninger Foundation and the University of Kansas School of Medicine.

Although the general theme to be covered is the treatment of psychiatric patients, special attention will be given methods for determining the effectiveness of various kinds of treatment.

Scheduled to present papers at the conference are Dr. Jules H. Masserman, Chicago, widely known for his work in experimental neurosis; Dr. James G. Miller, chairman of the Department of Psychology at the University of Chicago; Dr. George A. Ulett, associate professor of psychiatry at Washington University; Dr. Abram Hoffer, director of psychiatric research in the province of Saskatchewan; Dr. D. Louis Steinberg, superintendent of Elgin State Hospital, Illinois, and Dr. Karl A. Menninger, chief of staff of the Menninger Foundation. Dr. John Benjamin, Denver, will bring the meeting to an end with a summary and critique of the papers and discussions.

Distinguished research workers from universities and hospitals in the region will act as discussants, and the Topeka Psychoanalytic Society is joining the conference on the second day.

### LICENSED PRACTICAL NURSES

A practical plan to provide trained personnel for caring for the sick was inaugurated at the University of Kansas Medical Center with the establishment of the Florence Cook Department of Practical Nurse Education. Forty-two students have been graduated from the new one-year course.

A practical nurse is defined as a person trained

to care for mothers and new babies, convalescent patients, people suffering from the infirmities of old age, and others with chronic or light illnesses who do not require highly specialized treatments. She is also prepared to assist a professional nurse in the care of more acutely ill patients.

The practical nurse works under the direction of a doctor or professional nurse either in a home, hospital, or other institution, or public health agency. Her course of study includes less science and technical detail than that of a professional nurse and takes less time. The two types of nurses wear different insignia.

Qualifications for entrance to the school are designed to include young women who are interested in nursing as a career but are not scholastically capable of becoming registered nurses and more mature women seeking a profession that offers financial security without the expenditure of a great amount of time and money.

The course is open to women 18 years of age and older. Those under 25 must have had at least two years of high school; older candidates may qualify with an eighth grade education. All must be in good health and must possess desirable personal traits.

During the first three months, the course consists of discussions, demonstrations, and practice in nursing and homemaking. The second quarter is devoted to basic hospital experience in medical and surgical nursing and dietetics. The last six months include experience in pediatrics, obstetrics, and nursing in the home. Work in small hospitals is arranged for students who can leave Kansas City for that period. A graduate receives a certificate from the University of Kansas and is eligible to take an examination for licensing as a practical nurse.

Graduates have little difficulty in finding employment. Frequent requests for their services are received from hospitals, nursing homes, visiting nurse associations, and doctors.

Complete information on the course will be supplied by Mabel S. Campbell, R.N., Director, Florence Cook Department of Practical Nurse Education, University of Kansas Medical Center, Kansas City 3, Kansas.

### PUBLIC RELATIONS CONFERENCE

The A.M.A.'s sixth annual public relations conference will be held on Monday, November 30, the day before the opening of the A.M.A. clinical session, at the Jefferson Hotel, St. Louis. The program will be geared primarily for physicians. Among those invited are members of the A.M.A. House of Delegates, officers of state and county medical societies, executive secretaries, and public relations personnel.



# An Evaluation of the Toxicity of Chloramphenicol\*

Hershel A. Danemann, M.D.\*\*

Chicago, Illinois

Chloramphenicol (Chloromycetin®), a new broad spectrum antibiotic, has traveled a turbulent course in the brief three or four years it has been in use. Once hailed as one of the most efficacious of the wonder drugs, the rationale for its use is now questioned by many physicians. The drug manufacturer insists that physicians are making "much ado about nothing," and continues to laud his product. Medical journals, on the other hand, have carried a number of articles warning of danger in the use of this drug. The physician in the middle of this turmoil is left with many doubts as to the validity of either of these views. In the following pages I will attempt to correlate the present views on this subject, hoping in the process not to confuse the issue further.

## HISTORICAL

In late 1947 reports began to appear in the literature concerning a new antibiotic obtained from the fermentation products of the mold *Streptomyces venezuelae*. This drug, chloramphenicol, was found to be effective, in vitro, against such organisms as *B. abortus*, *Myco. tuberculosis*, *Salmonella*, *Shigella*, *E. coli*, and *Staph aureus*.<sup>4</sup> Later studies in chick embryos and mice demonstrated definite activity against rickettsia with no apparent toxic symptoms.<sup>25</sup> As a result of in vivo experiments in dogs, this drug was found to have most marked activity against rickettsia and gram negative organisms. The only toxic activity noted was a reversible anemia in dogs following parenteral administration.<sup>28</sup>

Following in vivo studies in man, it was found to be most effective against rickettsial diseases, having some slight anti-viral activity, but in comparison to other antibiotics it was preferred against only one organism, typhoid.<sup>26</sup> At that time no toxic symptoms were noted in man, although several authors had noted a slight transient leucopenia in patients being treated, the leucopenia clearing up following the discontinuation of the medication.<sup>19,27</sup> By early 1949, 90 per cent of the drug used was being produced by chemical synthesis, and no appreciable difference was found in the action or safety of this new compound.<sup>13</sup>

In August, 1949, certification of chloramphenicol was initiated by an amendment to the Federal Food, Drug, and Cosmetic Act. The evidence at that date indicated a low incidence of side effects and none of serious nature.<sup>13</sup> Soon afterwards, various authors began to report the results of experiments involving chloramphenicol administration in normal people. For all intents and purposes, these series showed that the drug caused no serious toxic effects.<sup>15,17</sup> However, certain minor toxic manifestations were noted and these are mentioned below.

## ORAL AND GASTROINTESTINAL COMPLICATIONS

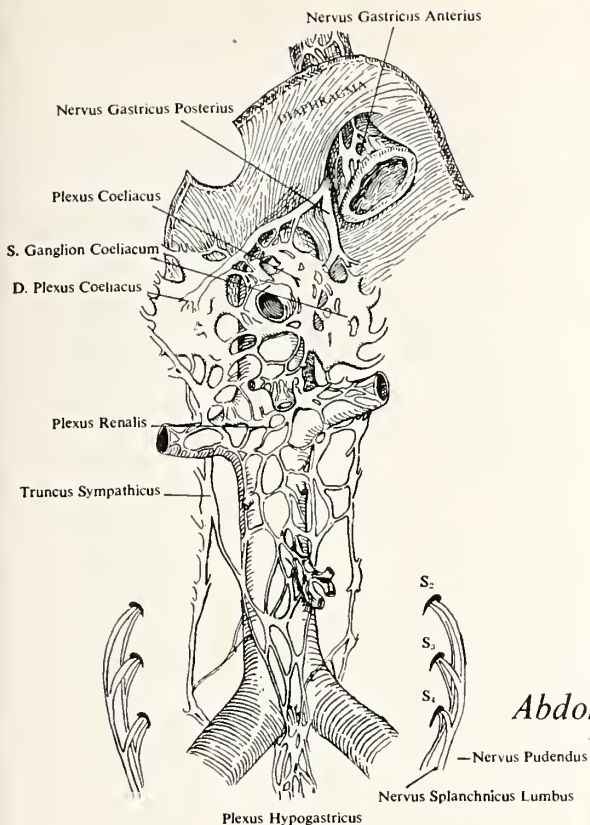
Williams<sup>35</sup> studied 200 patients receiving chloramphenicol. Six per cent showed oral or pharyngeal reactions manifested by glossitis and black tongue, stomatitis, pharyngitis, or infection of the mouth and throat by *Monilia*. The soreness of the mouth, tongue, and pharynx began on the fourth to sixth day of therapy. *Monilia* infection was found in five patients, and black tongue in four. It was noted that the most severe reactions occurred in patients receiving other antibiotics in addition to chloramphenicol. There appeared to be no relationship of the dose of the medication to the severity of the reaction.

Tomaszewski et al.,<sup>31</sup> however, in a series of 70 patients treated with chloramphenicol, felt these effects were seen more often in patients treated for a longer time and with large doses. His patients received a few grams to 96 Gm. (average 32 Gm.). He reported dry mouth in 40 per cent, denuded tongue in 52 per cent, flatulence in 34 per cent, nausea in 17 per cent, red oral mucous membranes in 17 per cent, vaginal irritation in 17 per cent, and rectal irritation in 13 per cent. The tongue lesions were due to disappearance of the normal bacterial flora with replacement by the fungus *Candida albicans*. More marked reactions were noted in women and in cases previously treated with penicillin and streptomycin.

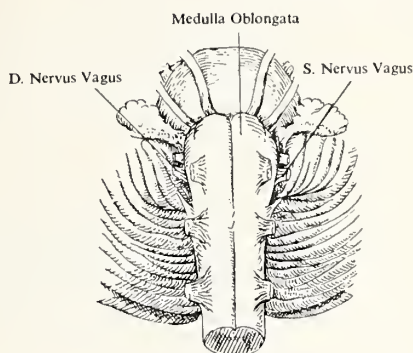
Harris,<sup>9</sup> in a series of 46 patients, recorded the results of careful observations over a period of one year. His cases received an average of 25 Gm. in 10 days. Several patients received two to four courses of treatment. He also noted a preponderance of gastrointestinal reactions in women as compared to men (3:1). This was attributed to "hormone activity through interference with enzyme systems." Nausea and vomiting were seldom encountered. Mild diar-

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\* Thesis written while the author was a senior student. Dr. Danemann is now interning at Michael Reese Hospital, Chicago, Illinois.



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## Abdominal autonomic plexus (sympathetic)

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1. Zupko, A. G.: Pharmacology and the General Practitioner, GP 7:55 (March) 1953.

2. McHardy, G. G., and Others: Clinical Evaluation of Methantheline (Banthine) Bromide in Gastroenterology, J.A.M.A. 147:1620 (Dec. 22) 1951.

SEARLE Research in the Service of Medicine



rhea was present early in the course of treatment in a small per cent of the cases. This lasted for a day or two and was then followed by constipation. Capricious appetite and odorless stools were also noted.

Catnazaro et al.<sup>1</sup> reported the occurrence of a low salt syndrome in a cardiac on 1.5 Gm. salt a day. The patient received a total of 21 Gm. chloramphenicol over a period of 10 days, and the resultant diarrhea precipitated the low salt syndrome. Reiner et al.<sup>20</sup> reported the occurrence of pseudomembranous colitis in two patients receiving chloramphenicol.

#### DERMATOLOGIC COMPLICATIONS

As compared to other antibiotics, chloramphenicol shows relatively few cases of acquired contact sensitivity. Robinson et al.<sup>24</sup> treated 70 patients having various pyoderms with 1 per cent chloramphenicol cream and reported only two cases of skin sensitivity. Newman et al.<sup>18</sup> treated 126 patients having pyogenic dermatoses with chloramphenicol cream (oil in water) and reported only one case of sensitivity. The cream was also used as a prophylactic dressing after removal of skin tumors in 100 patients, and there was no instance of contact dermatitis. No skin complications have been reported as a result of oral administration.

#### NEUROLOGIC COMPLICATIONS

Wallenstein<sup>33</sup> reported a neurotoxic reaction in a 24-year-old female treated continuously for ulcerative colitis. The patient developed bilateral optic neuritis, severe peripheral neuritis, and a severe leucopenia which cleared up following discontinuation of the drug and supportive treatment. Mental symptoms were reported in four patients being treated for pneumonia.<sup>37</sup> These consisted of mild depression in two cases, "dazed feeling" in one case, and confusion in one case. Smadel<sup>26</sup> reported a transient mild euphoria in several patients being treated for infectious diseases.

#### HEMATOLOGIC COMPLICATIONS

Judging from the above reports, and from a review of the literature published following the certification of chloramphenicol, it would seem that this drug was relatively safe and highly efficacious in comparison with other current broad spectrum antibiotics. In early 1950, however, reports were published concerning the role of chloramphenicol as an etiologic agent in the development of certain blood dyscrasias. The first few cases reported concerned the development of severe reversible leucopenias in patients receiving chloramphenicol therapeutically, usually in severe infections.<sup>6,19,23,33</sup> In most of these cases, no

other drugs were being given that might be thought to cause hematologic changes, and thus the evidence was mostly circumstantial.

However, to some observers, such a toxic manifestation was not too surprising. Shortly after its introduction, at least one observer, Smadel,<sup>26</sup> called attention to the nitrobenzene radical in the drug and warned of its possible toxic action on the blood forming organs. Smadel,<sup>27</sup> in 1948, reported leucopenia and reduction in hemoglobin in a typhus patient being treated with chloramphenicol. However, the white count returned to normal while the patient was still on therapy, and the changes seen were thought due to the disease.

Volini et al.,<sup>32</sup> in 1950, reported on their experience with three patients who were receiving chloramphenicol in therapeutic doses. A severe reversible granulopenia appeared in the blood and a granulocyte hypoplasia, with both erythroid and granulocyte maturation arrest, in the marrow.

Johnson et al.,<sup>12</sup> in 1950, reported on three patients with lupus erythematosus disseminatus being treated with chloramphenicol. In two, the existing anemia became greater during treatment. Erslev<sup>5</sup> recently reported similar instances of reversible erythrocyte and leucocyte depression in two patients being treated for Salmonella infection. One patient received a total of 155.5 Gm. in 50 days, and the other 66.5 Gm. in 24 days. Both patients, however, received other drugs before and during therapy. Anemia, leucopenia, hypoplasia of the erythropoietic marrow, and myeloid arrest at the metamyelocytic stage were observed.

In December 1950, Rich, Ritterhoff, and Hoffman<sup>22</sup> reported a case of fatal aplastic anemia in an elderly male patient who received chloramphenicol for a chronic renal infection three months prior to his death. Since that date, approximately 28 cases of fatal aplastic anemia have been reported in which chloramphenicol has been indicated as the causative factor.<sup>2,3,7,8,10,16,21,22,29,30,34,36</sup>

Hargraves, Mills, and Heck<sup>7,8</sup> have reported the largest single series with reasonably adequate laboratory and physical studies. In all cases, the bone marrow showed a decrease in myeloid and erythroid elements and a decrease to absence of megakaryocytes. The most common presenting sign was either purpura or petechia. In most cases, the onset of symptoms occurred a few months to a year following the first dose of the drug. However, in some cases, the time between the first ingestion of the drug and the onset of symptoms could be measured in hours rather than days.

No correlation has been possible between dosage of the drug and severity of symptoms. In some cases, the hypoplastic process following the intake of only



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a few grams was of much greater severity than that noted where massive amounts had been ingested prior to onset of symptoms. The anemic process has been seen to follow single courses of the drug. However, some patients have undergone intermittent medication without ill effect, only to develop the hypoplasia following subsequent courses of treatment. In general, the patients underwent a similar downhill course as regards both physical and laboratory findings.

As with other aplastic anemias, no effective method of treatment has been found. Both corticotropin and cortisone have been used with little benefit. Death, in most cases, occurred as a result of uncontrollable hemorrhage or overwhelming infection.

In the latter part of 1952, Lewis et al.,<sup>13</sup> of the Federal Security Agency, conducted a special survey on chloramphenicol and other drugs in relation to blood dyscrasias. In all, 44 cases of aplastic anemia were tabulated in which chloramphenicol could be said to be the only agent present to account for the dyscrasia. Of these, 23 died due to the hypoplastic process. Of interest was the observation that the distribution by sex showed females to predominate over males by nearly 3:1.

The incidence of reported cases among Negroes was found to be infrequent. Distribution by age showed that all age groups were represented. "The dosage regimen appeared to have little or no bearing on the development of the dyscrasia." The authors commented on the high incidence of multiple, intermittent, and prolonged administration as opposed to single courses of the drug in the cases reported. The authors further said, "It cannot be stated categorically that the incidence of blood dyscrasias has increased since chloramphenicol became available." As a result of this survey, the Food and Drug Administration directed the drug manufacturer to indicate, by label, that chloramphenicol might be associated with blood dyscrasias.

#### ETIOLOGY

That chloramphenicol, in certain susceptible individuals, causes undesirable side reactions cannot be questioned. Reactions manifested in the blood-forming tissues are the most important. The question now arises as to the mechanism responsible for these hemopoietic changes. Several theories have been proposed to explain this phenomenon.

First of all, it may be theorized that more than one type of hemotoxic reaction has been reported. In the earlier cases discussed in the literature, reversible leucopenia and erythropoietic depression were described. Later, a series of cases of fatal aplastic anemia were reported.

Are there two distinct types of reactions, or two different phases of the same process? In favor of the latter, it may be noted that the reversible changes were found early in the course of those patients upon whom routine blood counts were being run during the treatment period. In comparison, many of the cases of fatal aplastic anemia had no routine counts during therapy. However, many of the latter had adequate blood studies performed during the treatment period, only to succumb to anemia months later. Also, some patients received only small amounts of the drug, but nevertheless developed a fatal aplastic anemia within a short time following the onset of treatment.<sup>36</sup>

One author<sup>38</sup> suggests the possibility of two types of hematologic reactions. One is a transient depression of the formed elements of the blood involving the red cells, white cells, and platelets, occurring rarely in those patients receiving very large doses, or in those with renal insufficiency. In these patients, the blood returns to normal when the drug is stopped. The other is a true aplastic anemia occurring in people who had previously received one or more courses of the drug without serious effect. When the drug was subsequently administered, even in small doses, a severe blood abnormality appeared.

Unfortunately, this theory does not explain the cases of fatal aplastic anemia occurring following a single course of therapy. Also, as stated before, it has not been proved that high doses or prolonged administration of the drug are related to bone marrow depression.

Several authors<sup>8,29</sup> have suggested an allergic or sensitivity mechanism as being responsible. This theory is similar, in part, to one previously mentioned in that it refers to the uneventful administration of one or several courses of treatment, followed by a subsequent course in which the patient succumbs to an aplastic process. Lewis et al.<sup>13</sup> found a history of allergy in only 20 per cent of their cases of aplastic anemia associated with chloramphenicol. They stated, however, "In the ultimate explanation of the phenomenon leading to development of blood dyscrasias in the patient receiving chloramphenicol and other drug therapy, it is anticipated that hypersensitiveness may play a role."

The benzene ring structure of chloramphenicol has been held responsible by some authors.<sup>3,34,39,30</sup> If this were true, one would expect to see a greater correlation between time and dosage schedules. Smiley et al.,<sup>29</sup> however, state that in benzol poisoning the drug is usually given intermittently and dosage has no significance, as with chloramphenicol. Sturgeon<sup>30</sup> recalls that in some dyscrasias secondary to benzol, the anemia may appear a few weeks or many years

# 50 and Six

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following exposure, or it may not be discovered until many years afterward at the onset of an infection.

Since the drug is produced both by chemical synthesis and by fermentation, the possibility of a hemotoxic impurity in one preparation, but not in the other, has been speculated.<sup>13</sup> Since its certification, 90 per cent of the drug has been synthetically produced. Lewis et al.<sup>13</sup> stated, "Despite the fact that previous and current studies have offered no basis for this assumption, controlled studies to clarify this point are now in progress."

Wilson et al.<sup>34</sup> assuming the changes occurring are due to the influence of the benzene ring, suggested that the following alterations be looked for in the peripheral blood of a patient under chloramphenicol therapy: (1) early evidence of stimulation of the various myeloid elements, i.e., rise in red or white cell count; (2) increase in eosinophiles; (3) reduction in granulocytes; (4) reduction in thrombocytes; (5) decrease in erythrocytes. They proposed routine blood cell counts twice weekly during therapy to discover toxic changes.

Heck,<sup>11</sup> however, stated that routine blood counts are of little value due to the longevity of the cellular elements of the blood. This tends to mask the underlying aplastic process, so bone marrow studies were suggested as the only means of revealing the true status of the hemopoietic system. Heck further commented that doing routine blood counts, as suggested by the manufacturer, cannot be effective since the changes in the blood do not develop as an acute reaction, but frequently occur late after recovery from the infection for which the drug was given.

Ley<sup>14</sup> noted a fall in the reticulocyte count in a patient receiving chloramphenicol. He suggested that reticulocyte studies might be more indicative of the condition of the bone marrow than peripheral blood counts. Erslev<sup>5</sup> reported, in one patient recovering from hemopoietic depression due to chloramphenicol, that there was a definite reticulocyte response heralding the return of the marrow to normal.

#### DISCUSSION

Chloramphenicol, a new broad spectrum antibiotic, has been shown to have merit in certain infectious diseases in which other antibiotics are relatively ineffective. A review of the toxicity of this drug shows that, on the whole, these undesirable reactions are minimal in occurrence. Chloramphenicol cream as a surface medication has been shown to cause practically no allergic reactions. However, a relationship between this drug and certain blood dyscrasias has definitely been established. The most serious of these dyscrasias is aplastic anemia. In the cases reported, the mortality has been almost 100 per cent.

The mechanism by which this drug causes hypoplasia of bone marrow is not known.

The most popular school of thought as to the etiology of this mechanism involves a two-fold process: (1) A direct toxic effect of the drug on the bone marrow of certain susceptible individuals. This is thought to be related to the benzene ring structure of chloramphenicol. It is thought to be reversible following withdrawal of the drug. (2) An allergic or hypersensitivity mechanism as a result of intermittent use of the drug. This process is irreversible and fatal.

This theory does not explain all the hematologic phenomena seen. No tests have been devised to determine whether an individual is susceptible to the toxic action of the drug. Routine blood counts during therapy, as suggested by the manufacturer, are not thought to be of any avail since the longevity of the cellular elements of the blood would mask the underlying aplastic process. However, the counts would be of value in preventing cases of reversible cellular depression.

In all fairness to the manufacturer, it must be admitted that the evidence is mostly circumstantial. Parke, Davis and Company, in a recent publication,<sup>40</sup> estimated that approximately 8,000,000 people have taken therapeutic courses of at least 10 Gm. of chloramphenicol since its certification. They further point out that the mortality rates for aplastic anemia in this country have not increased in recent years in spite of the introduction of chloramphenicol. However, they fail to recognize the case histories of patients wherein this drug has played such an obvious part in the development of the aplastic process.

As has been proposed by many authors, the use of chloramphenicol, indeed, the use of any drug, should be based on a "calculated risk," that is, the mortality of the disease process should be weighed against the toxicity of the therapeutic agent. Chloramphenicol has usefulness in certain infectious diseases where other antibiotics are of no avail. However, as Heck<sup>11</sup> suggests, "Chloramphenicol should not be used if there are other antibiotics with the same general effect."

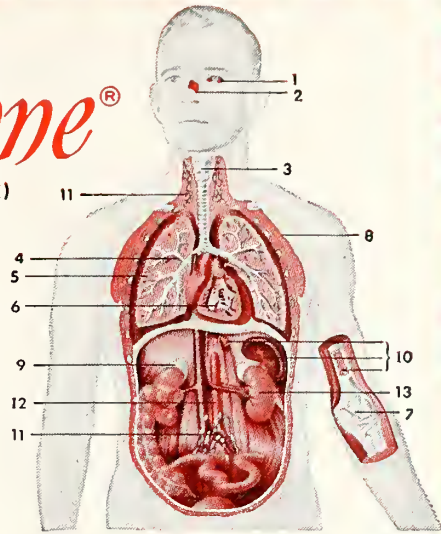
#### CONCLUSIONS AND SUMMARY

1. The toxic manifestations of chloramphenicol have been reviewed.
2. The most important reaction reported involves the part played by this drug in certain blood dyscrasias, namely aplastic anemia. This has been shown to necessitate a careful evaluation of the criteria calling for the use of chloramphenicol in infectious diseases.
3. Since the exact causative mechanism of the

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## Primary Sites of Pathology and Indications

**1. EYE**—Inflammatory eye disease. **2. NOSE**—Intractable hay fever. **3. LARYNX**—Laryngeal edema (allergic). **4. BRONCHI**—Intractable bronchial asthma. **5. LUNG**—Sarcoidosis. **6. HEART**—Acute rheumatic fever with carditis. **7. BONES, JOINTS, AND BURSAE**—Osteoarthritis; Rheumatoid arthritis; Rheumatoid spondylitis; Acute gouty arthritis; Still's disease; Psoriatic arthritis; Bursitis. **8. SKIN AND CONNECTIVE TISSUE**—Pemphigus; Disseminated lupus erythematosus; Scleroderma (early); Dermatomyositis; Atopic dermatitis; Exfoliative dermatitis; Dermatitis venenata (e.g., poison ivy); Dermatitis medicamentosa. **9. ADRENAL GLAND**—Congenital adrenal hyperplasia; Addison's disease; Following adrenalectomy for hypertension, Cushing's syndrome, and neoplastic diseases. **10. BLOOD, BONE, AND MARROW**—Allergic purpura; Acute leukemia\* (lymphocytic or granulocytic); Chronic lymphatic leukemia.\* **11. LYMPH NODES**—Lymphosarcoma;\* Hodgkin's disease.\* **12. ARTERIES AND CONNECTIVE TISSUE**—Periarthritis nodosa (early). **13. KIDNEY**—Nephrotic syndrome, without uremia (to induce withdrawal diuresis). **14. VARIOUS TISSUES**—Angioneurotic edema; Serum sickness; Sarcoidosis; Drug sensitization; Waterhouse-Friderichsen syndrome.

\*Transient beneficial effects.

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dyscrasias has not been determined, further investigative work is required to clarify the situation.

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## POLIO CARE IN KANSAS

Although it is the belief of agencies involved in providing polio care that financial responsibility rests with the individual or his family whenever possible, arrangements for other resources may be made in some instances.

The Kansas Crippled Children's Commission, an official agency of the state, will accept responsibility for patients committed to its care by action of the probate court. The patients, however, must be single, under 21 years of age, and in need of financial assistance.

Patients receiving such assistance are hospitalized at the following locations: University of Kansas Medical Center, Bethany Hospital and St. Margaret's Hospital in Kansas City; Wesley, St. Francis and Wichita Hospitals in Wichita; Stormont-Vail Hospital in Topeka; St. Elizabeth's and Grace Hospitals in Hutchinson; St. Anthony's and Hadley Memorial Hospitals in Hays, and Asbury Hospital in Salina. Post-polio cases only will be cared for at St. Francis Hospital, Topeka.

The National Foundation for Infantile Paralysis assists any family in meeting its financial responsibility for the care of polio patients in those instances where meeting the obligations would seriously alter the family living standard. The need for assistance is determined in each county by the local chapter, and no specific means test is applied. Included in such benefits are medical, hospital, nursing, physiotherapy, transportation, appliances, and other related services.

In addition to the hospitals listed above, the Foundation will provide payment for patients at these additional institutions: Bethel Hospital, Newton; Newman Memorial Hospital, Emporia; St. Rose Hospital, Great Bend; St. Joseph Hospital, Concordia; St. Mary's and William Newton Memorial Hospitals, Winfield; Arkansas City Memorial Hospital, Arkansas City; St. Thomas Hospital, Colby, and Neosho Memorial Hospital, Chanute.

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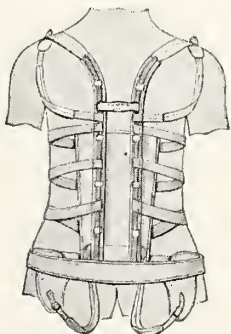
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## COUNTY SOCIETIES

The first fall meeting of the Shawnee County Medical Society was held at the society's building in Topeka on September 8, following a dinner. Dr. G. O'Neil Proud, of the University of Kansas Medical Center, spoke on "Safe and Dangerous Ears." At the business session three associate members were transferred to active status and two new members were added.

A meeting of the Riley County Medical Society was held at Manhattan in August with city and county officials in attendance to discuss plans for a city-county health department. Dr. Vernon M. Winkle, Topeka, a representative of the Kansas State Board of Health, explained the organization of such a department. It was decided that city and county commissioners should form a joint board of health with which the Society will work to complete organization plans.

## ANNOUNCEMENTS

The National Foundation for Infantile Paralysis announces the availability of a limited number of additional postdoctoral fellowships to candidates whose interests are research and teaching in medicine and the related biological and physical sciences. The purpose of the fellowships is to increase the number of professional workers qualified to give leadership in the solution of basic and critical research problems of poliomyelitis and other crippling diseases.

The fellowships cover a period of from one to five years. Stipends range from \$3,600 to \$7,000 a year, with consideration given to marital and dependency status. A total of 181 fellowship awards had been made by the Foundation up to August 1, 1953.

Complete information concerning qualifications and applications may be obtained from the Division of Professional Education, National Foundation for Infantile Paralysis, 120 Broadway, New York 5, New York.

The American Society for the Study of Sterility announces the opening of the 1954 contest for the most outstanding contribution to the subject of infertility and sterility. The winner will receive a cash award of \$1,000. Essays must be submitted no later than March 1, 1954. Information may be

secured from the Society, 920 South 19th Street, Birmingham, Alabama.

A postgraduate course on diseases of the chest will be offered at the Hotel New Yorker, New York City, November 2-6, under the sponsorship of the Council on Postgraduate Medical Education of the American College of Chest Physicians. A registration fee of \$75 will be charged. Information may be obtained from the College, 112 East Chestnut Street, Chicago 11, Illinois.

The 1953 annual convention of the National Society for Crippled Children and Adults will be held at the Palmer House, Chicago, November 12-14. Programs and information may be obtained from the Society, 11 South LaSalle Street, Chicago 3, Illinois.

The 20th annual meeting of the American College of Chest Physicians will be held in San Francisco, June 17-20, 1954. Physicians interested in presenting scientific papers should write Dr. Edgar Mayer, 850 Fifth Avenue, New York 21, New York, before January 1, 1954.

### REPORT ON MULTIPLE SCREENING SERVICES

Bringing together all available information on multiple screening techniques throughout the country was the object of a study recently completed by the A.M.A.'s Council on Medical Service. This technique involves the use of two or more simple laboratory tests, examinations or procedures, applied rapidly and on a mass basis, to determine presumptive evidence of unrecognized or incipient disease or defect.

In the A.M.A.'s study, data has been compiled on some 25 multiple screening surveys ranging from small county and industrial plant projects to city-wide and state-wide programs. Data also has been gathered on some of the single case-finding programs such as mass tuberculosis surveys, diabetes, cancer and heart disease detection clinics. The report includes comments and conclusions by those directly connected with the surveys studied, plus other pertinent information such as advantages and disadvantages and ultimate goals of these programs.

Copies of the full report will be distributed to all state medical societies. Additional copies will be available as long as the limited supply lasts. A complete bibliography on this subject may be obtained from the Council.

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## CLINICAL SESSION IN ST. LOUIS

The seventh annual clinical session of the American Medical Association will be held in St. Louis, December 1-4. The program has been designed to give the general practitioner an opportunity to see and hear the latest developments in medicine.

Topics to be covered are chest injuries, compression fractures of the vertebra, chronic pancreatitis, weed poisoning, chronic arthritis, drugs and vaccine therapy, problems of delivery (manikin demonstrations), traffic accidents, and diabetes.

Scientific sessions, exhibits, lectures, motion pictures, and color television will be presented at Kiel Auditorium. The A.M.A. House of Delegates and Reference Committee will meet at the Jefferson Hotel.

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## RUNYON FUND GRANT INCREASED

A \$10,000 grant from the Damon Runyon Memorial Fund for Cancer Research was awarded recently to the University of Kansas School of Medicine, following by one year a grant of \$25,000 from the same source. Dr. Robert E. Stowell, who directs cancer research there, is assisted by Dr. Chauncey G. Bly and Dr. Harold J. Grady. The studies are concerned with the underlying function, chemistry, and structure of certain cancer cells.

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# THE JOURNAL

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## KANSAS MEDICAL SOCIETY

*Owned and Published by The Kansas Medical Society*

Volume LIV

NOVEMBER, 1953

No. 11

## The Peptic Ulcer Problem: A Review of 516 Surgical Cases\*

R. L. Sanders, M.D.

Memphis, Tennessee

This review, covering our experience with surgical peptic ulcers over the past 10 years, is presented in illustration of our conception of the indications for operation and the surgical procedures most applicable to the various types of ulcers. Between January 1, 1943, and January 1, 1953, we operated upon 516 patients with peptic ulcer. Twenty-nine had gastrojejunal, 56 gastric, and 431 duodenal lesions, all benign. Of the 516, 402 were males and 114 were females (Table I).

TABLE I

SEX INCIDENCE OF 516 PATIENTS WITH SURGICAL PEPTIC ULCER

Males .....	402 (78%)
Females .....	114 (22%)

### DUODENAL ULCER

The 431 patients with duodenal ulcers represent 20.7 per cent of a total of 2,079 of those with duodenal ulcer observed during the same period. The majority were referred for operation by their home physicians after having been treated for a number of years, with little or no benefit. We have consistently endeavored to observe the established principle that only those ulcers which have acutely perforated and those which have proved intractable to medical management, are persistently obstructive, or dangerously hemorrhagic are suitable for surgical treatment. The incidence of these complications in the cases under review may be seen in Table II.

\* Presented at the 95th annual session, Kansas Medical Society, Wichita, Kansas, May 3-7, 1953.

TABLE II

SURGICAL COMPLICATIONS OF DUODENAL ULCER

431 Cases—10 Years	
Obstruction .....	151 (35.0%)
Bleeding .....	90 (20.9%)
Obstruction and Bleeding .....	54 (12.5%)
Intractability .....	104 (24.0%)
Acute Perforation .....	32 (7.0%)
Total .....	431

*Perforation.* The perforation of anterior wall ulcers may give rise to an acute abdominal catastrophe or may be protected by the surrounding tissues. Fortunately, the majority are of the latter type.

Every physician is familiar with the classic symptoms and signs of an acute perforation of a peptic ulcer, particularly the excruciating pain and the board-like rigidity and exquisite tenderness of the abdomen. The necessity for immediate operation in such cases is also well known. After a few hours the patient may seem slightly more comfortable, though the abdominal tenderness and rigidity persist and a plain film usually reveals gas beneath the diaphragm. If surgery is not undertaken at this stage, the signs of peritonitis may soon appear.

Thirty-two (7.4 per cent) of the patients in this group of 431 had acute or unprotected perforations (Table II). Sixty-eight (15.8 per cent) apparently had protected perforations, making a total of 100 with perforations, or almost one-fourth of the 431 patients (Table III). Two of those with acute perforation had had a perforation previously, one of them on two occasions. The latter patient was treated



TABLE III  
FINDINGS AT OPERATION FOR DUODENAL ULCER

431 Cases		
	Multiple Ulcers	Protected Perforation
Bleeding Ulcers (90)	33	10
Obstructing Ulcers (151)	67	32
Bleeding and Obstructing (54)	24	11
Intractable Ulcers (104)	25	15
Acutely Perforating Ulcers (32)	2	—
Total	151	68

by subtotal resection; all the others were treated by simple closure of the perforation.

Acute perforations of ulcers are notorious for their high mortality, a fact which affords the best possible reason for early operation. Five (15.6 per cent) of these 32 patients died postoperatively. In one of these, the perforation had been present for 70 hours; the patient had generalized peritonitis and was in extremis on admission to the hospital. Another, whose perforation was of four days' duration, developed multiple subphrenic and abdominal abscesses, with peritonitis and disruption of the wound. A third, whose perforation had been present for 72 hours, had a generalized peritonitis at operation and subsequently developed a subphrenic abscess followed by disruption of the wound. The fourth had a perforation of seven hours' duration. A large subphrenic abscess developed and, though drainage was established, the patient succumbed from sepsis and exhaustion. The fifth patient was admitted to the hospital seven hours after the perforation; he was in a state of shock on admission and died a few hours postoperatively without recovering from the shocked condition. The last patient was operated upon in 1947, the other four in 1943 and 1944. In part, we attribute the recovery of all patients with acutely perforating ulcers within recent years to the use of antibiotics. Earlier surgery, however, might have saved all these patients.

*Intractable Ulcer.* On the whole, duodenal ulcers which are commonly called intractable present the most difficult of all problems concerned with the decision to operate. The outstanding feature of this group is more or less severe and persistent pain or discomfort. The association of some degree of hemorrhage or obstruction, or both, is not uncommon. High acid values is the rule rather than the exception. The patient with such an ulcer is usually extremely nervous, and either incapable of being relieved by medical treatment or unable, for business or financial reasons, to follow the required regimen.

One hundred four, or 24 per cent, of the ulcers in this group fell into the category of intractability (Table II). The period of treatment had varied from 2 to 26 years, which was sufficient to discourage both

the patients and their physicians. Several requested surgery because of inability to follow the prescribed medical regimen. Seventeen had had a previous acute perforation which had been closed surgically. Many others had a mild degree of obstruction or gave a history of bleeding on at least one occasion. At operation, a protected perforation or multiple ulcers, or both, were found in 34 patients, 25 having multiple ulcers and 15 chronic perforations (Table III).

*Obstruction.* Healed ulcers, usually situated on the anterior wall, often produce obstruction from scar tissue contracture which can be relieved only by surgery. Patients with such ulcers give a history of constant or recurrent symptoms covering many years, and the majority have low acid values. Frequently, however, either an anterior or posterior ulcer, or both together, produce obstruction incident to inflammatory changes. In any case of obstruction, the presence of an anterior lesion should lead one to suspect another on the posterior wall.

Of our 431 patients, 205 (47.5 per cent) had ulcers which were producing moderate to complete obstruction. Fifty-four of these also gave a history of bleeding of mild to moderate degree (Table II). A total of 91 were multiple and 43, many of them in the multiple group, were associated with chronic perforation (Table III).

*Hemorrhage.* Patients with mildly hemorrhagic ulcers can usually be carried along indefinitely on medical treatment, even though the bleeding may be recurrent. We have limited surgery to those in whom the bleeding has been free on two or more occasions or is associated with obstruction or persistent pain.

Of these 431 patients, 144 (33.4 per cent) had chronically bleeding ulcers. Hemorrhage was the chief basis for operation in 90 of the 144 (Table II). Thirty-three of the 90 had multiple ulcers, and 11 had a protected perforation of an anterior ulcer (Table III). The hemorrhage was coming from an anterior ulcer in 55 (38 per cent) of the 144, though in general the severely bleeding lesions were on the posterior wall.

In the presence of massive hemorrhage, the decision to operate will depend upon several considerations. In patients under 45 years of age, a clot will usually form and close the opening. We believe surgery is indicated only if transfusions and other supportive treatment fail to control the bleeding and raise the blood pressure to a satisfactory level within 36 to 48 hours. Especially is this true if the hemorrhage is the first evidence of ulcer and the patient has had no opportunity to try medical treatment. If the ulcer is of long standing, however, and medical measures have been given an adequate trial, we believe operation is advisable as soon as the pa-

tient sufficiently recovers from the effects of the hemorrhage. In any case, a second massive hemorrhage is a definite indication for surgical intervention.

In older persons, on the other hand, the arteries are less elastic, and the formation of a clot is less likely. It is best to operate on these patients within 12 to 24 hours unless continuous or repeated transfusions bring about a definite improvement; even then, operation should be performed as soon as possible after the hemorrhage ceases. Reports of large series of cases have shown that operations for massive hemorrhage in individuals over 45 years of age carry a high mortality, especially if the procedure is delayed beyond the first 24 hours after the onset.

Four of these patients had massively bleeding ulcers, though only one was operated upon during the hemorrhage. This was a woman aged 32 years, who was referred because of almost continuous bleeding for two weeks, despite 17 transfusions. She had bled constantly for 7 hours prior to admission to the hospital, and her red blood cell count was only 2,000,000. Because of her age and failure of the hemorrhage to respond to transfusions, a subtotal resection was performed. She had a smooth post-operative course and has remained well since the operation, now almost five years ago.

TABLE IV  
OPERATIONS FOR DUODENAL ULCER

431 Cases	
Resection .....	208 (48.2%)
Gastroenterostomy and Vagotomy .....	137 (31.7%)
Gastroenterostomy .....	49 (11.0%)
Closure Perforation .....	31 (7.2%)*
Vagotomy .....	5 (1.1%)
Pyloroplasty and Vagotomy .....	1 (0.23%)
Total .....	431

\* One perforating ulcer treated by resection.

In Table IV are shown the types of operations employed in these 431 cases. Almost all the vagotomies, alone and with gastroenterostomy, were performed during a three-year period from the latter part of 1946 to the latter part of 1949. Our experience with this procedure has been similar to that reported by other surgeons: the immediate results were spectacular, though too many of the patients had recurrent difficulty of more or less severity. For this reason, we have practically abandoned the use of vagotomy for primary duodenal ulcer, considering it suitable only for patients with excessively high acids, and then only in combination with resection or gastroenterostomy.

It will be observed that of the 431 patients with duodenal ulcer, 208, or 48.2 per cent, had a gastric resection. For the past three years we have employed resection in 93 per cent of our cases, with the ex-

ception of those with acute perforation. It is worth mentioning that 51 patients (25 per cent) for whom a resection was performed had previously been operated upon for duodenal ulcer.

The technique of resection in these cases has been varied according to the requirements of each case. As a rule, we resect 50 to 65 per cent of the stomach. Only in the presence of excessive acids or a severe gastritis is more than this amount removed. Also, for ulcers situated so low in the duodenum as to preclude their safe removal, we have preferred to divide the duodenum above the lesion, leaving it undisturbed, but always have included the entire pylorus and the antral mucosa in the 65 per cent resection.

With the exception of the 32 who had acute perforations, a total of 399 patients were operated upon for intractable, obstructive, and hemorrhagic ulcers. In this group there were 2 fatalities, or approximately .5 per cent. The total of 7 fatalities in the entire 431 cases, including those with acute perforation, was 1.6 per cent (Table V).

TABLE V  
MORTALITY FOLLOWING OPERATIONS  
FOR DUODENAL ULCER

431 Cases	
Acute perforation (32) .....	5 (15.6%)
All others (399) .....	2 (0.5%)
Total .....	7 (1.6%)

One of the patients who succumbed, a man aged 56, had been treated for a duodenal ulcer for 20 years and had recently had mild bleeding. Following a gastroenterostomy and vagotomy, his progress was excellent, and he was walking about. On the seventh day, however, he had a sudden seizure and died within five minutes, apparently from a massive pulmonary embolism.

The second of these patients, a man aged 45, had been on a medical regimen almost constantly over a period of 12 years and had persistently refused operation. On exploration, a large, penetrating and obstructing posterior ulcer with a perforated but protected anterior ulcer was found, and a resection was performed. Acute pancreatitis with fat necrosis and infection, as shown by autopsy, were believed primarily responsible for the fatal outcome. In both these cases, we felt that medical treatment had been overdone.

#### GASTRIC ULCER

Of the 56 patients of this series who had gastric ulcer, 24 had an ulcer on the duodenal side of the pylorus as well (Table VI). Five had been operated upon previously for duodenal ulcer. None of these



TABLE VI  
COMPLICATIONS OF GASTRIC ULCER

56 Cases	
Associated duodenal ulcer .....	24
Bleeding .....	11
Perforation .....	10

patients have been included among the 431 with duodenal ulcer alone.

Eleven of the 56 patients gave a history of bleeding, and in 10 the ulcer appeared to have perforated. One of the latter had a liver abscess. One patient had three gastric ulcers, all on the lesser curvature.

We look upon gastric ulcer as a surgical condition. It is our belief that prolonged or even a short period of medical treatment is rarely justified, in that almost 20 per cent of ulcers in this location prove to be malignant. The roentgenologist is seldom able to determine whether the lesion is benign or malignant, and not infrequently the pathologist has difficulty in making the distinction after the specimen has been removed.

A gastric resection was performed in all these patients, with one exception. This was a man aged 45, who had a bleeding gastric ulcer which was perforating into the omentum, associated with multiple duodenal ulcers and complete obstruction of the pylorus. His condition was further complicated by advanced heart disease. A gastroenterostomy was performed. He died following the operation, heart disease being the chief cause of death. This was the only fatality in the group of patients with gastric ulcer and constitutes a mortality of approximately 2 per cent of the 56.

GASTROJEJUNAL ULCER

The majority of gastrojejunal ulcers develop following gastroenterostomy in patients with high acid values and without obstruction of the pylorus. The symptoms are similar to those of duodenal ulcer, although the pain is slightly lower and more to the left. They may appear at any time from a few weeks to many years after the operation. One of our patients came to operation 25 years and another 27 years following the previous operation.

Since medical treatment gives only temporary relief of the symptoms of gastrojejunal ulcer, we regard surgery as imperative as soon as the patient can be prepared. The necessity for operation is increased in the presence of bleeding or the demonstration of an associated active duodenal ulcer. Signs of perforation onto the transverse mesocolon or into the transverse colon or peritoneal cavity demand immediate surgical treatment.

For gastrojejunal ulcer in patients who have had

a gastroenterostomy, we consider disconnection of the stoma and high subtotal resection the procedure of choice. In patients with excessive acids, the addition of a vagotomy may be of value. Following a previous gastric resection, a higher resection is usually advisable, though if the patient presents a poor risk, a vagotomy alone may be expedient. Or, at times, it may be necessary to compromise with some other procedure. For example, one of our patients who had had a subtotal resection for duodenal ulcer six weeks previously, entered the hospital a second time with an acutely perforating gastrojejunal ulcer and generalized peritonitis. Because of his extremely dangerous condition, the ulcer was simply closed. A jejunostomy was formed for feeding purposes. When last observed, five months postoperatively, he was free of symptoms and eating well.

TABLE VII  
GASTROJEJUNAL ULCER

Previous Operations—29 Cases	
Resection .....	5
Gastroenterostomy only .....	18
Gastroenterostomy and Vagotomy .....	6

Table VII shows the operations previously performed in this group of cases, and in Table VIII are those employed for the gastrojejunal ulcers.

TABLE VIII  
OPERATIONS FOR GASTROJEJUNAL ULCER

29 Cases	
Resection .....	19
Re-resection .....	2
Disconnection Gastroenterostomy .....	4
Vagotomy only (previous Gastroenterostomy) .....	3
Closure Ulcer and Jejunostomy .....	1
Total .....	29

As will be seen, there was one fatality following resection for gastrojejunal ulcer (3.5 per cent.). The patient was a woman aged 54, who had had a gastric resection with a Polya anastomosis for a large subacute and partially obstructing duodenal ulcer. Two months later, she was readmitted to the hospital with a gastrojejunal ulcer and colon fistula, complete obstruction of the colon, and a perforation into the peritoneal cavity admitting two fingers. The colon fistula was closed, the obstruction released, several inches of the jejunum were removed, and the stoma was reset. Again, two months after the second operation, she entered the hospital with a large abscess secondary to another perforation. The jejunal anastomosis had separated almost throughout, and a considerable portion of the gastroenterostomy had also separated. The jejunum and stomach were re-resected

and a Hofmeister type of anastomosis was made. The abscess was drained. Following this operation, her progress was fairly satisfactory for a few days; thereafter, the stomach contents began to drain from the incision, indicating a third perforation, and she died within a few days. Perhaps a vagotomy at the initial resection would have helped to reduce the stomach acids in this patient and prevented the formation of a gastrojejunal ulcer. At the second and third operations, her condition was so nearly moribund as to preclude the additional surgery incident to vagotomy. This is the only case we have ever seen of three perforations of a gastrojejunal ulcer following resection.

#### COMMENT

From these and previous experiences with duodenal ulcer, together covering approximately 900 operations, two points appear to be outstanding:

First, to make a diagnosis of duodenal ulcer is one thing, and to know when to operate is quite another. A simple ulcer with which the patient can live in comfort with reasonable care requires no surgery. A complicated ulcer which continues to incapacitate the patient over a period of years, however, is not a simple ulcer. To persist in delaying operation in such cases is as unsound in principle as to operate without adequate justification. Herein lies a fruitful field for

the combined efforts of the physician and the surgeon.

Second, the ultimate result depends largely upon the choice of the operation. At present, there is a trend toward resection for acute perforations, provided the patient's condition permits. In the majority of cases, however, we feel that the immediate necessity of saving the patient's life calls for nothing more than closure of the perforation. The ultimate result is a secondary consideration, even though a large number of those who have a closure alone may be expected to require a subsequent operation. We have had no experience with non-surgical treatment of acutely perforating ulcer, as recommended by the English.

Time has not altered the usage of gastroenterostomy for cicatrizing obstructive ulcers. Otherwise, the indications for this procedure have been limited chiefly to poor risk patients, particularly if elderly, with inflammatory ulcers which are persistently obstructive.

With the foregoing exceptions, the whole idea of surgery for duodenal ulcer is to rid the patient of his disease at one stroke, so he may have no further difficulty from either the ulcer or postoperative complications. Gastric resection to an extent commensurate with the amount of acids present in the individual patient has proved to be the operation which best accomplishes this objective.

## Toxemia of Pregnancy\*

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Toxemia of pregnancy has long been the principal cause of maternal deaths in North Carolina. Indeed, the South is often referred to as the "toxemia belt," because of the unusual incidence of toxemia and severe forms of the hypertensive complications of pregnancy in this section of the country. Because deaths from toxemia occur predominantly among the indigent and underprivileged classes, it is often thought to be primarily a disease of "ill housed, ill fed and ill clothed women." The truth is, however, that toxemia occurs in all races and classes, without regard for economic and educational status. Any physician who does obstetric practice is constantly faced with the problem of hypertension, albuminuria, or edema occurring at various stages of pregnancy.

By definition, the toxemias of pregnancy are disorders encountered during gestation or in the early puerperium, and characterized by one or more of the following signs: hypertension, edema, albuminuria and, in severe cases, convulsion and coma.

Hypertension is defined as the presence of a systolic blood pressure of 140 mm. of mercury or above, and a diastolic pressure of 90 mm. In a patient who was previously hypotensive or hypertensive, a rise of 30 mm. or more in the systolic pressure or 15 mm. or more in the diastolic is evidence of acute toxemia. Albuminuria developing in a patient with chronic hypertension is also evidence of superimposed toxemia of pregnancy.

#### CLASSIFICATION

The difficulty of classifying the hypertensive complications of pregnancy is indicated by the large

\* Presented at the 94th annual session of the Kansas Medical Society, Wichita, Kansas, May 3-7, 1953.

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number of classifications which have appeared in the past. For many years all obstetricians and teaching centers employed their own classifications. The presentation of an acceptable classification of toxemia of pregnancy by the American Committee on Maternal

TABLE 1  
CLASSIFICATION OF TOXEMIA OF PREGNANCY  
ADVOCATED BY THE AMERICAN COMMITTEE  
ON MATERNAL WELFARE

I. Acute toxemia of pregnancy
A. Pre-eclampsia
1. Mild
2. Severe
II. Chronic hypertensive (vascular) disease with pregnancy
A. Chronic hypertensive vascular disease without superimposed acute toxemia
1. Those cases in which hypertension was definitely known to exist before the onset of pregnancy
2. Cases in which hypertension was discovered before the twenty-fourth week
B. Chronic hypertensive vascular disease with superimposed acute toxemia

Welfare (Table 1) has been a major contribution to the welfare of this group of obstetric patients.

*Group I.* This classification includes the acute toxemias of pregnancy, subdivided into pre-eclampsia, mild and severe, and eclampsia. All the patients in this group are normal prior to pregnancy, and the hypertensive syndrome develops as an acute phenomenon. Mild cases, by definition, are those in which the blood pressure is below 160 systolic and 100 diastolic and the urine contains less than 0.6 Gm. of albumin per 100 cc. We are not in full accord with the designation "mild pre-eclampsia" for these cases, since it implies that the patient is not in danger. Some obstetricians believe that mild pre-eclampsia does not progress into the severe form, or into eclampsia. Our experience is quite contrary to this opinion.

*Group II.* The second major group in this classification is made up of patients who have chronic hypertensive (vascular) disease with pregnancy superimposed. These cases are divided into those in whom hypertension is definitely known to exist before pregnancy, and those in whom hypertension appears before the 24th week of pregnancy. The latter group is further subdivided into cases with and without evidence of superimposed acute toxemia.

The newest classification of toxemia which was adopted by the American Committee on Maternal Welfare in 1952 entirely omits renal diseases as such. This omission simplifies the classification and does away with many confusing points. This classification shows that all types of toxemia have a common factor—that of a vascular disorder.

#### THE IMPORTANCE OF AN ACCURATE DIAGNOSIS

*Management of toxemia.* The primary objectives in the management of all cases of toxemia are: (1) to avoid eclampsia, abruptio placentae, and additional vascular or renal accidents contributing to maternal mortality; (2) to obtain a living child, and to reduce

the fetal hazards resulting from toxemia to an absolute minimum; (3) to prevent, if possible, the development of a fixed or increased hypertension following the termination of pregnancy.

Since the management of all cases of toxemia, as well as the prognosis for both mother and child, depends chiefly upon an accurate diagnosis of the fundamental lesion present, it is essential to determine correctly the classification of each patient with a hypertensive complication of pregnancy. We all recognize the difficulty of classifying satisfactorily the disease of some of our patients. However, there is little question that a careful study of the patient, employing the usual clinical and laboratory methods, will lead to a reasonably accurate diagnosis, and in turn will give one some idea of the response to be expected from the treatment.

In general, we may expect a satisfactory response to conservative therapy in most patients with pre-eclampsia. We may also expect a reasonable response in those cases of chronic hypertensive vascular disease with superimposed acute toxemia of pregnancy. However, cases of severe chronic hypertensive vascular disease without superimposed toxemia of pregnancy usually respond to treatment poorly, if at all.

At times the decision concerning the management of these patients with toxemia is difficult. Severe hypertension with evidence of renal damage may be present when the infant is very near the period of viability, and the family may be determined to take unusual risks in their great desire for a child. When severe renal disease is observed at the onset of pregnancy, or when moderate degrees of toxemia occur in a patient at term or actually in labor, there is usually no question as to the proper management. However, less clear cut problems are more common.

#### INCIDENCE OF TOXEMIA IN NORMAL AND HYPERTENSIVE WOMEN

The incidence of toxemia of pregnancy in patients admitted to the North Carolina Baptist Hospital is comparable to that in other institutions. The period

TABLE 2  
THE INCIDENCE OF TOXEMIA OF PREGNANCY AT  
THE NORTH CAROLINA BAPTIST HOSPITAL, 1945-1947

Year	Deliveries	Cases of Toxemia	Incidence of Toxemia
1945	930	94	8.0
1946	1160	99	
1947	1112	65	
Total	3202	258	

from 1945 to 1947 is typical (Table 2). During this time, 3,202 deliveries occurred in the hospital and 258 patients had significant degrees of toxemia. This incidence of 8.0 per cent means that one out of every 12 obstetric patients admitted required special consideration because of a hypertensive complication of pregnancy. During this period, chronic hypertensive

disease made up 30 per cent of the cases of toxemia seen in the North Carolina Baptist Hospital (Table 3). From 1948 through 1952, there were 6,255 deliveries with 627 cases of toxemia, an incidence of 10 per cent. Patients with chronic hypertensive vascular disease have continued to represent 20 to 30 per cent of the toxemic group.

TABLE 3  
CLASSIFICATION OF TOXEMIAS OF PREGNANCY  
SEEN IN THE NORTH CAROLINA BAPTIST  
HOSPITAL, 1945-1947

Type of Toxemia	1945	No. of Cases		Total	Incidence
		1946	1947		
Type 2					
HCV D					
Benign	10	23	18-51	54	20.9%
Malignant	1	1	1-3		
Glomerulonephritis				7	2.7%
Acute	1	0	1-2		
Chronic	3	2	0-5		
Pylonephritis	7	6	5	18	7.0%
Type 1					
Pre-eclampsia	66	63	39	168	65.0%
Eclampsia	4	2	0	6	2.3%
Unclassified	2	2	1	5	2.0%
Total	94	99	65	258	100.0%

#### HAZARDS OF PREGNANCY IN WOMEN WITH CHRONIC HYPERTENSION

It is generally conceded that the incidence of superimposed toxemia of pregnancy varies from 25 to 50 per cent in patients who have chronic hypertensive disease.

Although acute toxemia of pregnancy is largely preventable in normal women who have satisfactory prenatal care, it is often impossible to prevent the progression of hypertension during pregnancy in women with chronic vascular disease, and the incidence of superimposed pre-eclampsia, abruptio placentae, stillbirths and maternal deaths is greatly increased in such women. The classic study made by Corvin and Herrick<sup>1</sup> in 1927 supports this view. These authors concluded:

"Very few women who begin pregnancy with a blood pressure above 150 systolic or 100 diastolic can go through pregnancy successfully, that is, with a living child. It is our opinion, moreover, that pregnancy does much to accelerate the progress of chronic cardiovascular disease, that it may bring it out when latent and it is to be avoided when the disorder has made evident inroads."

Chelsey and Cosgrove<sup>2</sup> studied 301 pregnancies occurring in 218 patients with vascular disease (Table 4). Even in the cases without superimposed toxemia, the fetal loss was 18.5 per cent. When toxemia was superimposed, the fetal loss was 50 per cent, and the incidence of other serious complications was greatly increased. These authors stated:

"In cases which we recognize as pure hypertensive, about half go through the entire pregnancy with

TABLE 4  
INCIDENCE OF COMPLICATIONS IN 301 PREGNANCIES  
OCCURRING IN 218 PATIENTS WITH VASCULAR  
DISEASE (CHELSEY AND COSGROVE)

	In Cases With No Superimposed Toxemia	In Cases With Superimposed Toxemia	In All Cases
Fetal loss	18.5%	50.0%	38.2%
Abruptio placentae	3.8%	10.0%	5.6%
Eclampsia	0	10.0%	3.0%
Immediate maternal mortality	0	6.7%	2.0%
Late puerperal deaths (1 to 4 months)	0.9%	5.5%	2.3%

essential constant blood pressure level. In the other half, various changes or combination of changes are seen; in nearly 40 per cent the blood pressure drops late in the first trimester, usually to return to the initial level, or a higher one, in late pregnancy. Occasionally, this drop will bring the pressure down within normal range so that in the absence of a reliable history the late rise will be interpreted as pre-eclampsia. In about 10 per cent of the cases, the blood pressure rises above its original average level early in the second trimester. This is most ominous for fetal prognosis. In these cases who have marked proteinuria or proteinuria with increased hypertension or edema in conjunction with either of the other triads of symptoms, it is usually interpreted as a superimposition of toxemia on the original hypertension. This occurs in about one-third of hypertensive pregnancies."

Jones<sup>3</sup> reported the experience at the Providence, Rhode Island, Hospital in 1951. In 51,840 deliveries, there were 1,553 cases of toxemia. Two hundred forty-four of these patients had essential hypertension, which was considered benign in 203 of the cases. His analysis of this group of patients with so-called benign hypertension revealed the following increases in the usual incidence of complications:

1. Pre-eclampsia—14 times as frequent.
2. Abruptio placentae—10 times.
3. Cerebral hemorrhage or convulsion—20 times.
4. Fetal deaths—67 times.
5. Maternal death—35 times.

There is little question that in most cases of hypertensive cardiovascular disease the condition can be expected to progress during pregnancy, reducing the life expectancy of the patient. Since the chance of obtaining a live baby is seldom better than one in three, we do not advise any of these patients to attempt pregnancy, and the great majority of the therapeutic abortions which we perform are done in this group of patients.

#### MANAGEMENT OF PREGNANT PATIENTS WITH CHRONIC HYPERTENSIVE VASCULAR DISEASE

Every patient who shows any evidence of hypertension early in pregnancy should be carefully evaluated from the point of view of renal function. Al-



though a urinalysis which shows a specific gravity above 1.020 without formed elements or albumin is indicative of satisfactory renal status, we feel that such patients should be hospitalized for urea clearance studies, a phenolsulfonphthalein excretion test, concentration tests, and blood chemical determinations. It is unfortunate that we do not have a satisfactory method of determining whether the kidneys are able to sustain a pregnancy, or whether pre-eclampsia will be superimposed.

Therapeutic abortion is indicated if there is (1) evidence of renal damage; (2) hypertensive heart disease with roentgenographic evidence of cardiac enlargement or electrocardiographic changes; (3) changes in the retinas with old exudate or fresh hemorrhages; or (4) a previous history of superimposed toxemia during pregnancy, since this condition may be expected to recur in 71 per cent of the patients.

Patients with hypertensive vascular disease who are permitted to continue pregnancy must be made to understand the hazards to their own welfare and the poor chances of obtaining a live child. These patients should also understand that interruption of pregnancy may be necessary, whether or not the infant has reached the period of viability, if acute toxemia is superimposed. The prenatal supervision of such patients must be meticulous, and they must be checked at frequent intervals. In the first half of pregnancy they should be seen at least once every week or 10 days, and in the third trimester they must be seen twice each week. At each visit the blood pressure, weight, size of the uterus, and condition of the fetus should be recorded, and the urine should be studied for albumin. The patient should be instructed to rest at least one hour in the morning and one hour in the afternoon, and physical activity should be restricted.

Many hypertensive patients are obese, and their

weight gain should be restricted. However, we believe that the caloric intake of all hypertensive prenatal patients should be held to a maximum of 1500 to 1800 calories, containing a minimum of 96 Gm. of protein, and that their sodium intake should be reduced to a maximum of 1.5 Gm. per day.

Whenever an increase in blood pressure or the appearance of albuminuria or edema gives evidence of superimposed acute toxemia, the patient should be hospitalized immediately for treatment and observation. We have been satisfied with the results of a regimen consisting of a high-protein, low-salt diet, sedation, and bed rest. The blood pressure is recorded four times daily; the fluid intake and output and the degree of albuminuria are recorded each day. If the patient responds to treatment, every effort is made to continue the pregnancy to the 32nd or 34th week in order to obtain a live infant. However, if her condition does not improve or if signs and symptoms become worse, labor must be induced.

It has been shown repeatedly that in women without previous vascular disease, the incidence of residual hypertension following pre-eclampsia is proportionate to the period of time elapsing between the onset of toxemia and delivery. When the duration of pre-eclampsia does not exceed four weeks, only about 20 per cent of the patients will have residual hypertension. If the pre-eclampsia lasts longer than six weeks, chronic hypertension develops in more than 60 per cent of the patients. In view of this serious effect of prolonged toxemia upon the normal individual, it can be seen that the danger to the patient who has chronic hypertension is excessive.

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All things are engaged in writing their history. The planet, the pebble, goes attended by its shadow. The rolling rock leaves its scratches on the mountain; the river, its channel in the soil; the animal, its bones in the stratum; the fern and leaf, their modest epitaph in the coal. The falling drop makes its sculpture in the sand or the stone. Not a foot steps into the snow or along the ground but prints, in characters more or less lasting, a map of its march. Every act of the man inscribes itself in the memories of its fellows, and in his own manners and face. The air is full of sounds, the sky of tokens, the ground is all memoranda and signatures, and every object covered over with hints which speak to the intelligent.—*Ralph Waldo Emerson.*

# Cardiovascular Laboratory, University of Kansas Medical Center: Report of Activities of First 24 Months, May 1951-May 1953

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As a part of the general development program of the University of Kansas Medical Center, a Cardiovascular Laboratory was considered desirable and necessary. Adequate physical facilities for such a unit were included in the expansion of the Out Patient Clinic Building. Plans were made for 17 rooms, to include examining rooms, conference rooms, offices, laboratories, and special equipment rooms. This physical plant was completed in November, 1950, the necessary equipment being installed and personnel employed and trained by May, 1951.

The influence of such a unit on undergraduate teaching, patient care, research, and postgraduate teaching could be considerable. This report outlines only the patient care activities of the laboratory during its first 24 months. Research activities and teaching have been an integral part of patient care, and it would be difficult to decide where each began and ended. Any attempt to quantitate the work and responsibility of a considerable number of physicians and ancillary personnel over a 24-month period results in impersonal graphs and charts; the actual experience gained, mistakes made, and problems presented can only be inferred. Also, we appreciate that volume of work does not necessarily indicate quality of work.

This report is divided into four sections:

- I. Diagnostic procedures.
- II. Surgical procedures.
- III. Residents and fellows.
- IV. Grants.

Section 1 has been the responsibility of Doctors Dimond, Lin, Hall, and Diehl with the help of residents and fellows. Section 2 has been the responsibility of Doctors Schafer, Kittle, and Friesen.

## I. DIAGNOSTIC PROCEDURES

a. *Electrocardiograms.* During this 2-year period, 13,546 electrocardiograms were recorded, mounted, and interpreted. The records have been 12 lead tracings, obtained on direct writing equipment. The original records have been filed in the laboratory;

each record has been given a diagnostic code number, and a separate code file is maintained. The technician responsible for this area has been Miss Margaret Delich, assisted by Ilah Plumb, Frances Tague, Marjorie Krause, and Inez Claxton.

b. *Peripheral Vascular Studies.* A cork-lined, constant temperature room, equipped for peripheral vascular diagnostic studies, was included in the original planning of the unit. This area has been under the supervision of Dr. Stanley Morest with technical help from Inez Claxton. During the 2-year period, 10 Landis tests and 70 plethysmographic studies have been carried out. Studies of this nature have proved valuable, but very time consuming.

c. *Cardiac Catheterization.* Among the more difficult responsibilities has been the equipping of a cardiac catheterization unit and the training of personnel. This has been the only catheter team in the state, and the demand for its services has been heavy. The personnel responsible for catheterization have been Doctors Dimond, Lin, and Santos. The actual maintenance of equipment, determination of blood samples, and handling of records has been the responsibility of Mrs. Joyce Brewer, a superb technician.

In this 24-month period, 130 catheterizations of the right heart were accomplished. No deaths attributable to the procedure occurred. The principal complications were:

1. Temporary cardiac standstill with recovery, in one patient.
2. Temporary right bundle branch. We immediately terminated the procedure and the conduction returned to normal in 30 minutes, one patient.
3. Severe venous spasm, making its impossible to move the catheter for 2 hours, one patient.
4. Severe shaking chill immediately following the procedure, in one patient.
5. Fever immediately following the procedure, to 105°, a positive blood culture was obtained in one patient.
6. Subcutaneous hematoma, in the axilla, evidently due to puncture of subclavian vein by catheter. This resolved in two days without difficulty.

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d. *Angiocardiography*. This technique has been given a minor role in our laboratory, with major emphasis placed on catheterization. A total of 26 dye studies have been made including translumbar aortagrams and peripheral arterio and venograms. Two deaths occurred during angiocardiography.

These studies have been done in conjunction with the Radiology Department with particular help from Dr. Galen Tice and Dr. Donald Germann.

e. *Ballistocardiograms*. This diagnostic procedure has been carried out several hundred times. The exact number of records obtained is meaningless; during the initial 18-month period experimental studies were carried out with the torsion ballistocardiograph with several hours frequently devoted to obtaining the record on a single patient. In the past six months a Sanborn model of the Dock Shin ballistocardiogram has been used. One hundred and twenty records have been obtained with this instrument. These records were not obtained for their particular diagnostic value, but primarily as an attempt to become acquainted with this field. This test has been the responsibility of Doctors Reissman, Santos, Dimond, and Lamb.

f. *Consultations*. The group has seen 3,766 patients in consultation. No attempt has been made to develop a large out-patient service, but instead a consultation type of service has been developed. On each of these patients, cardiac work-up has included fluoroscopy and electrocardiogram.

A separate, special hypertension clinic under the guidance of Doctors Dimond and Gunn has been established. This clinic consists of a "colony" of patients with a primary diagnosis of essential hypertension. This special clinic is maintained for the purpose of providing a pool of patients with whom we have long range contact and rapport, thus providing an ideal group for testing the efficiency of new hypotensive agents. Nine hundred and forty-nine patient visits were made in this clinic during the 24-month period.

## II. SURGICAL PROCEDURES

The work in this area has been done primarily by Doctors Schafer, Kittle, and Freisen.

a. *Patent Ductus Ligation*. During this 24-month period, 26 patent ducti were ligated. The ages varied from 8 months to 34 years. No deaths resulted and in this group *no* recanalizations occurred. We felt that the result was excellent in all 26.

b. *Patent Ductus Ligated and Transected*. Two patients who had had their ductus ligated and not cut approximately three years ago were found to again have machinery murmurs. Because of this experience and other such experiences over the country, we have been ligating and transecting the ductus in recent months. During this period, seven such

procedures were done on patients from age 2 to 36 with no mortality.

c. *Coarctation of Aorta*. Fourteen patients with coarctation were operated upon during the 24-month period. The ages range from 3 months to 36 years. The cut ends of the aorta could be approximated and sutured in all but one patient. In this single patient, a donor vessel graft was successful.

Three deaths occurred in this group. One, a child, died as the aortic clamps were released, following approximation. The second was a 26-year-old man who died suddenly on the 12th postoperative day, presumably from rupture of the anastomosis, and a 24-year-old woman died suddenly during her 6th postoperative week.

d. *Blalock Procedure* (Subclavian Artery to Pulmonary Artery End to Side Anastomosis). Eight patients with tetralogy of Fallot and one with tricuspid atresia underwent this vessel shunting procedure. The ages varied from 3 to 37 years. No deaths occurred. In recent months, we have replaced this procedure with the Pott's operation (aorta to pulmonary, side to side anastomosis).

e. *Brock Procedure* (Pulmonary Valvulotomy). We did not undertake any operations in this area until the past year. Thus far (until May 1953) we have attempted to open the pulmonary valve eight times in seven patients. In one patient, catheterization following surgery proved that the procedure had not relieved the right ventricular hypertension. We therefore repeated the operation and noted a fall in right ventricular pressure from 105 mm Hg to 35 mm Hg, systolic. Since this experience, we have passed a catheter through the operative wound, during surgery, and established the adequacy of the valvulotomy before closing the incision.

We have had one death, occurring one day postoperatively, from emboli.

f. *Mitral Valvulotomy*. This procedure was carried out 34 times with three deaths. None died during the operation, but expired on the 1st day, 8th day, and 11th day postoperatively.

Eight other patients, besides this group of 34, were explored and, because of either too much regurgitation or the presence of a massive thrombus in the auricle, were simply closed. There was one death in this group.

The oldest patient operated among the total group of 42 was 72 years old. She recovered without difficulty.

The valve could usually be opened by finger fracture; a knife was necessary infrequently. We catheterized several patients before and after surgery, but have abandoned this as an unnecessary procedure. The selection of patients for the operation can practically always be arrived at by clinical means. However, it is impossible to predict correctly the

percentage of regurgitation from physical examination. On occasion, we have hesitated at advising surgery because of what seemed too much regurgitation, clinically, only to find the patient considerably benefited by valvuloplasty.

This operation deserves wide acceptance. It is relatively safe and is the only satisfactory method of treating mitral stenosis. We have become more aggressive in recommending this operation, primarily because we have observed emboli and cardiac failure occur while we were hesitating.

g. *Pericardectomies* (for Constrictive Pericarditis). We have had four patients with classical constrictive pericarditis. Pericardectomy was safely accomplished in each. It is interesting to note that a positive tuberculin test was present in but one.

h. *Aneurysm Repair*. We have attempted the repair of an aneurysm in five patients. Two were wrapped, one evidently successfully. One was grafted successfully. One was grafted and the anastomosis site ruptured on the 21st day. One died on the table.

i. *Smithwick Procedures* (Thoraco-Lumbar Sympathectomies). This procedure was carried out on 16 patients, resulting in 31 operations. The primary disease was hypertension in each case. One death occurred during the second-stage operation; no patients have died since the procedure, although the majority were severely ill prior to surgery. We believe that the area for this procedure is limited, but on occasion it seems remarkably effective in reversing destructive disease.

j. *Lumbar Sympathectomy* (For Peripheral Vascular Disease). Fourteen attempts at removal of the lumbar sympathetics in 12 patients were carried out. No mortality occurred.

k. *Cervical Sympathectomy*. This operation was accomplished in one patient with intractable angina with considerable relief. Another patient, with Raynaud's disease, was also operated upon, also with considerable relief.

l. *Inferior Vena Cava Ligation*. Ligation of the inferior vena cava in an attempt to aid compensation in the presence of protracted heart failure has been advocated by others, particularly Cossio in South America. Considerable skepticism has been expressed in the United States. However, after several animal experiments, we were encouraged to apply the procedure on five suitably selected cardiac patients. All were in severe chronic right heart failure. All had received digitalis, diuretics, sodium restriction, etc., but persisted in massive edema. It was surprising to us to find how well the operative procedure was tolerated by these very ill people. Two of the five have seemed to be considerably benefited with return to near normal life (but with continued strict cardiac management). A third patient benefited immediately with a 30-pound

weight loss. She was discharged from the hospital, stopped her medications, used salt, and promptly decompensated. We again successfully diuresed her, and she has remained compensated during the three months we have observed her. A fourth patient seems to be unchanged and still has persistent edema and ascites. The fifth patient was in severe failure at the time of surgery and died the next day.

In judging these results, one must remember that these patients were in marked, chronic right heart failure and had been considered terminal.

m. *Exploratory Cardiotomies*. Eleven patients could be considered as having exploratory operations. Seven of these were operated on because of mitral heart disease, and in all the valve was found to be non-reparable or else a large, fixed thrombus was found in the auricle.

Three patients with continuous machinery murmurs were considered to have patent ductus arteriosus, and no attempt was made to prove the diagnosis by catheterization. Two of these explorations indicated the murmur originated in a high ventricular septal defect; in the third the murmur originated in an opening between a sinus of valsalva of the aorta and the right ventricle. The underlying lesion seemed to be a ruptured aneurysm of the sinus of valsalva.

The 11th patient in the group of exploratory cardiotomies was found to have an inoperable problem (Eisenmenger's complex).

n. *Miscellaneous*. Five miscellaneous operations were done.

- (a) pericardial cyst removal
- (b) femoral artery embolectomy
- (c) repair of a stab wound of the right ventricle
- (d) thrombo-endarterectomy for Leriche syndrome
- (e) attempted repair of aberrant pulmonary veins.

### III. RESIDENTS AND FELLOWS

Each resident in medicine is assigned for a period to the Cardiovascular Laboratory. At present, this is a four-month assignment. During this two-year period, eight residents were on the service (Doctors Neal Jenkins, Joe Stockard, Robert Jenson, Charles Powell, Edwin Slentz, Fethi Gonlubal, Chesterfield Gunn, and Gustave Eisemann).

Special fellows in cardiovascular disease have been trained for periods of one year each. These fellows have been Lawrence Lamb, Mehru Bandorawalla, of Poona, India (sponsored by Rotary International), Dr. Everton dos Marques Santos, Rio de Janeiro, Brasil (sponsored by Institute of International Education), and Dr. T. K. Lin (sponsored by the National Heart Institute).

One man, after completing a year as a fellow with the laboratory, has begun a residency in cardio-



vascular surgery. We hope to stimulate more of our group to do this as we are convinced that the proper training for a cardiologist includes diagnosis and therapy, both medical and surgical. In this field, as in urology, neurosurgery, ophthalmology, etc., the ultimate objective should be to train individuals who are versed in the total aspects of the disease system.

IV. GRANTS AND ENDOWMENTS

The principal support of the unit stems, of course, from the medical center budget. We have been fortunate in augmenting this support with grants and endowments from several areas.

The principal outside support has been from the National Heart Institute, a division of the United States Public Health Service. The institute has awarded the medical center yearly grants for the purpose of developing the undergraduate teaching program. These funds have been instrumental in allowing the laboratory to develop and evolve. Although these funds are primarily available for the development of the undergraduate teaching program, it is apparent that, secondarily, they permit better equipment and more personnel so that every region of the laboratory and of the medical center will benefit. The service of such funds to the entire area is considerable. It is encouraging and stimulating to witness the growth and improvement in personnel and physical plants which the National Heart Institute has accelerated over the country.

During the initial 18-month period, a grant was obtained from the United States Air Force, permitting the transfer of several items of valuable equipment to the laboratory for study and use.

Specific allocations were obtained from the National Heart Institute for the support of experimentation in methods for transmission of electrocardiograms by standard telephone lines, for the investigation of the torsion ballistocardiograph, for studies in experimental rheumatic fever, and in pulmonary disease.

The will of Henry Haskell designated the laboratory as the recipient of \$100,000, the interest from which will be used for the support of an annual Agnes Haskell Fellow in Cardiology.

SUMMARY

This is presented as a report summarizing the activities of the Cardiovascular Laboratory during its first two years of operation, May 1951, to May 1953. This is primarily a summary of patient care responsibilities detailing the diagnostic and therapeutic problems. The training of residents and fellows and the sources of support are also described.

UNIVERSITY OF KANSAS MEDICAL CENTER  
CARDIOVASCULAR LABORATORY  
May 1951—May 1953

	Number	Deaths
Consultations	3,766	—
Electrocardiograms	13,546	—
Cardiac Catheterizations	130	None
Angiograms	26	2
Patent Ductus Repair	26	None
Coarctation of Aorta Repair	14	3
Blalock Operation	9	None
Pulmonary Valvulotomy	8	1
Mitral Valvulotomy	42	4
Repair of Aneurysm	5	2
Lumbo-Dorsal Sympathectomy	31	1
Inferior Vena Cava Ligation	5	1
Lumbar Sympathectomy	14	None
Cervical Sympathectomy	2	None
Exploratory Cardiotomies	11	3

Citizenship means that each one of us must know and understand how our government works. We must be willing to study and understand the principles upon which our government is founded. We must know and understand the issues of the day, both local and national. To the extent possible, we must participate in the selection of the officials who govern us and must be willing to serve our government. Our government. . . will only be so good as those who administer it. We must vote at every election. In other words, we must think, read, talk and work. Work is not the least of these efforts. There is no place for idleness in the American system of economy.—Ford Q. Elvidge.

## PLANS FOR 1954 MEETING

Plans are rapidly being completed for the 1954 annual meeting of the Kansas Medical Society, to be held in Topeka, May 2-6, with members of the Shawnee County Medical Society as hosts. Various committees have met during the past few months, and in the future will announce arrangements as they are completed.

Dr. Francis T. Collins, president of the host group, is an ex officio member of each committee, and Dr. Charles S. Joss has accepted an appointment as general chairman of the session. Committee chairmen are as follows: Program, Dr. Daniel L. Tappen; EENT Program, Dr. Harold W. Powers; Publicity, Dr. David E. Gray; Skeet Shoot, Dr. R. Dale Dickson; Golf Tournament, Dr. Byron J. Ashley; Banquet, Dr. Richard Greer; Auxiliary, Dr. Robert E. Pfuetze; Medical Assistants, Dr. Harry J. Davis; Commercial Exhibits, Dr. Floyd C. Beelman; Scientific Exhibits, Dr. Robert P. Woods; Luncheon Meetings, Dr. C. K. Schaffer and Dr. Henry S. Blake.

## NEW MEMBER OF COUNCIL

Dr. Norton L. Francis, Wichita, was appointed councilor of the Sixth District to fill a vacancy occasioned by the resignation of Dr. Clyde W. Miller. The appointment was made at a meeting of the Council held in Topeka on September 27.

Dr. Miller resigned this position because of his having been elected second vice-president, which position places him on the Council. Dr. Francis will serve on the Council until the next meeting of the House of Delegates, at which time there will be a caucus of members of the Sixth District, and the position will be filled in accordance with provisions of the Constitution and By-Laws.

Dr. Francis has been active in many affairs of the medical society. He is currently chairman of the Blue Shield Fee Committee and in the past has served on a number of other committees. He has also been active in affairs of the Sedgwick County Medical Society and in private practice limits his work to otolaryngology.

## CANCER SOCIETY MEETS

Dr. Karl E. Voldeng, Wellington, who served as president of the Kansas Division of the American Cancer Society after the resignation from that office of Dr. Charles H. Miller, Parsons, was elected to an additional full year in office at the group's annual meeting held in Topeka, October 18 and 19.

The following officers were re-elected: vice president, Mrs. Tom Stewart, Wellington; secretary, Mr. J. W. Kirkpatrick, El Dorado; treasurer, Mr. Robert

A. McClure, Topeka, and executive director, Mr. W. Miles Pulford, Topeka.

Speaker at the annual banquet at the Hotel Jayhawk, October 18, was Dr. J. Samuel Binkley, Oklahoma City, whose subject was "A Decisive Victory in Cancer Control."

## CHILDHOOD ACCIDENTS

Accidents kill and cripple more children than all the infectious diseases of childhood put together, according to a report on childhood mortality released recently by the Children's Bureau. "If parents understood the accident problem and were as concerned about it as they are about polio and other contagious diseases," the report states, "the toll of childhood death and disability could be cut sharply."

The death rate from accidents among children of ages 1 to 19 was cut only 16 per cent during the period from 1940 to 1949, while the rate for all other causes of death among children of these ages was slashed 46 per cent.

The report cited the following findings for the year 1949. Children under one year of age died from accidents of all types at a rate of 72.1 per 100,000. Home accidents accounted for infant deaths at a rate of 43 per 100,000. Fires, explosions, and burns set a rate of 9.8 per 100,000, and motor vehicles, 6.5. The largest single cause of accidental death in infancy was inhalation or ingestion of objects, with a rate of 28.5. That cause, the report points out, is to be distinguished from "accidental mechanical suffocation," which recent studies show are neither accidents nor due to mechanical suffocation."

Children between the ages of 2 and 4 died from accidents at the rate of 37.8 per 100,000; 5 to 9, 22.3; 10 to 14, 22.7; 15 to 19, 47.2. In the latter group, motor vehicles take the heaviest toll with drowning as the second major cause of death.

"Accident prevention means setting up and maintaining precautionary measures," the report states. "The measures that could reduce accidents are known to family physicians, health officers, teachers, and safety experts. But they can do little until parents are well enough informed to see that the needed precautions are set up and continuously maintained in the home, school, and other places where children are exposed to accidents."

## MARCH OF MEDICINE ON TV

The second of a series of telecasts on the A.M.A. program, *March of Medicine*, will originate in St. Louis on the night of December 3, reporting highlights of the clinical meeting being held there at that time. The program will begin at 9:00 and will be carried by a network serving this area.



## PRESIDENT'S PAGE

DEAR DOCTOR:

The average physician will raise his eyebrows when he reads the report of the Washington A.M.A. office on medical and health budgets of federal agencies. Even in this era of astronomical appropriations and with the knowledge that the United States has entered numerous facets of the health care picture, one is not quite prepared to expect this process to have reached its monstrous present size. This 11-page closely knit bulletin lists 60 separate health programs pursued by 19 different federal departments at a cost of \$1,775,882,197 for the next fiscal year!

Listing them here is impossible, but the following contrasts may be of interest. The Children's Bureau will receive 31 million, Vocational Education 23 million, and \$6,250,000 will be allotted to the Food and Drug Administration. The United States Public Health Service operates 13 medical programs, as for example six million for tuberculosis control, five million for venereal disease control, and larger amounts for other services.

National Institutes of Health should flourish in the coming year with the National Cancer Institute receiving 20 million, the Mental Health Institute 12 million, the Heart Institute 15 million, the Institute of Arthritis seven million, and so forth. Of course the armed forces and the veterans' administration are recipients of large grants with more than 747 million going to the latter alone. Almost lonesome among such items as 33 million for hospital care of leprosy patients and narcotic addicts is \$2,790,000 for the Bureau of Narcotic Control.

But there it is, for whatever it may mean. In addition to health services from all private and local governmental sources, from insurance, and the various health agencies, the United States today offers health services which, if equally assessed, would amount to \$12 annually for each man, woman, and child in this nation.

A handwritten signature in cursive script, reading "Lucien R. Pyle". The signature is written in dark ink and is positioned at the bottom of the page, below the main body of text.

## EDITORIAL COMMENT

### STATE CHAMBER OF COMMERCE POLICY TOWARD MEDICINE

The Kansas Medical Society holds membership in the Kansas State Chamber of Commerce and has taken a particular interest in the activities of the chamber's Social Security Council. This council is charged with writing the chamber's policy on all matters relating to social security, a portion of which directly involves the medical profession. In 1949 and each year thereafter, the council has met to review its policies and was in session in Topeka on October 20, 1953.

There are perhaps 25 or more members of this council, including representatives of a variety of business and professional organizations from all over the state. They met all day to discuss the different aspects of social security and took action on a great many separate items. These are then referred to the board of directors and become official policy when approved by the governing body.

A portion of this study relating to medicine has been only slightly altered since 1949 and has been approved and reaffirmed by the board on three separate occasions, the latest being on July 28, 1953. The medical society reported its present opinion, and in each instance the recommendations of the Society were accepted without dissent. The major declarations of policy on these subjects are included below as they were stated during the recent meeting.

The Kansas State Chamber of Commerce has three times previously accepted the following statement on disability insurance and again reaffirmed its policy on August 20: "The state chamber favors a federal disability insurance program for the permanently and totally disabled only, in conjunction with the Old Age and Survivors Insurance program with proper safeguards on government and individuals relative to eligibility and rehabilitation standards. A federal disability insurance program for the temporarily disabled is opposed. Also, the state chamber opposes temporary disability (cash sickness) insurance programs on the state level and urges voluntary group efforts in providing such insurance coverage."

On health insurance the statement is a long one, and only a portion is here included: "The Kansas State Chamber of Commerce believes that the physical health of a nation is the cornerstone of its economic health. Accordingly, the past efforts of this organization in encouraging and supporting health activities of benefit to the people of Kansas, and to the nation as a whole, will be vigorously continued. We urge

that other voluntary groups continue and expand all activities holding reasonable promise of further improving the health of the citizens of Kansas and the United States. We do not subscribe to the declaration that there is presently a crisis in the health field. Past efforts toward improving the nation's health, as reflected in mortality statistics and by other evidence, have been amazingly successful. There is every reason to believe that those voluntary efforts will continue to provide such results.

"Efforts to improve the health of the nation should center at the community level—in Kansas as well as in every other state. Accordingly, we urge local businessmen and others concerned to take all feasible steps to support community health activities, including support for local health groups. Businessmen should continue to participate actively in developing the arrangements needed to keep local activities on a sound and an increasingly effective basis."

The previous position of the Kansas State Chamber of Commerce on medical care for the indigent received considerable attention following discussion by representatives of the medical society and the Kansas State Board of Social Welfare. In view of the possibility of some alteration of procedure under this category, the council voted to defer action and requested the medical society and the board of social welfare to prepare briefs on this subject which could be more carefully studied at a subsequent meeting to be called during the winter.

Even though the general subject of government administered compulsory health insurance is not a particular crisis at the moment, the council again endorsed its previous policy on this subject: "The remarkable growth of voluntary, non-occupational prepayment insurance in recent years has been of great value in enabling individuals and groups to meet the cost of modern medical care. Such insurance is now widely available both through the indemnity contracts of insurance companies and through the service contracts of non-profit plans. These voluntary efforts should be encouraged. In particular, communities are urged to participate in prepayment group insurance plans to aid citizens in better meeting their health needs.

"Proposals for government administered health insurance are opposed because:

"1. There is no evidence of a present crisis in the health field. United States medical care is far superior to that of any nation, some of which have compulsory medical care plans.

"2. The term 'free' medical care has been used falsely. With estimates of the ultimate costs of such insurance approaching 8 to 10 per cent of covered payrolls to be split between employer and employee, we believe such costs to be prohibitive. Payroll deductions and payments by self-employed would, if



sufficient to cover the cost, substantially increase the current tax bills of each participant. Failure to meet costs in this manner would necessitate heavy withdrawals from the general treasury, every penny of which comes from the taxpayer's pocket.

"3. Certain abuses of the system by selfish and neurotic patients appear unavoidable with the result of overcrowding health facilities to the exclusion of many of the bona fide sick.

"4. Lowering of the quality of medical care will result from the loss of personal contact between physician and patient—to the end of ultimate loss of the basic ingredients of good medical practice, the human touch. Assembly line techniques and hurried examinations will be coupled with the probability that patients will have no assurance that they will be able to select *and get* the doctor of their choice.

"5. No compulsory health plan can guarantee medical service to all. Only as doctors and health facilities are available and their time can cover all those requesting attention can any plan provide complete medical care coverage.

"6. Such plans would eliminate all citizen initiative in the further development of present organized health services and substitute for it a sterile bureaucratic administrative control inherently in opposition to democratic processes."

### MEDICAL EDUCATION

The Council on Medical Education and Hospitals of the American Medical Association recently issued two pamphlets, the first listing the approved colleges of arts and sciences in the United States and the second offering information to a prospective student on the choice of a medical school. Both are admittedly incomplete with reference to information about any one school, but each contains a considerable amount of data on the general subject of medical education. A review of this material follows.

The Council on Medical Education was created in 1904 for the purpose of improving the standard of medical training. Its name was changed in 1920. In 1910, the first classification of medical schools was published, together with a formal statement of standards for an acceptable school. These have of course been revised and are now published annually in the *Journal of the American Medical Association* in a special educational number.

Among the specific items of advice to prospective students in the medical schools of the United States is a strong recommendation that the student secure his training in an institution which is recognized by all state licensing boards. With reference to premedical education, no particular courses are specified for high school education. In college, English, physics, biology, inorganic chemistry, and organic chemis-

try are required by most institutions. Scientific courses must include both theoretic and laboratory work. The student is urged to arrange his program so he will obtain a broad general education, and he should consult his premedical advisors for more specific information.

A list of all approved colleges whose premedical courses are acceptable to the medical schools of this country is available. The Council on Medical Education and Hospitals recommends that students planning to take medical education attend one of these colleges. There are of course many to choose from, as for example 19 in Kansas alone. It is not impossible for the student from some other college to obtain admission to a medical school, but, in a field where there regularly are three applicants for each person accepted, he will find it more difficult to obtain acceptance if his premedical work was done at an unacceptable school. At the present time three years of college training is generally required. For most students, four years is recommended, and only rarely will a medical school admit a student after two years of college work.

The national Selective Service system provides for deferment of certain college students to continue their education. Although premedical students are not separately listed, this generally may be based upon the full time college students who score above 70 on the college student qualification test or who are scholastically above the median of the male members in their first year class of college, in the upper two-thirds of the second year, and in the upper three-fourths during the third year. Continuing deferment is based at least in part upon the certification from the college or, in later years, the medical school, that the individual student's scholastic work continues to be acceptable.

The council recommends that students apply to the medical school of their choice a year before they plan to enter. It is also recommended that candidates consider applying to three or five schools, but it advises against applying to more than that number.

Although facilities have been expanded to meet the increased demand, many persons wishing to study medicine cannot be accepted. Prior to World War II, 6,000 freshman medical students were enrolled. In 1953, there were more than 7,300 freshmen. These were studying in the 72 approved medical schools in the United States. In addition, there are seven approved two-year schools which are qualified to enable the student to take basic science board examinations. These schools also had students not enrolling for the final two years in other schools. Four medical schools in the United States require a year of internship as a part of the medical course. Twenty-six states require a year's internship for licensure, although it is universally recommended.

The required curriculum extends over a period of four academic years and lists 22 specific subjects in which courses must be offered.

The cost of medical education varies greatly, including living expenses, tuition, books, and equipment. It ranges from \$900 to \$4,500, with a median yearly average of \$2,000. The average tuition last year was \$633. Even at that figure, tuition fees provide less than one-fourth the cost of operating the medical school, exclusive of the cost of maintaining teaching hospitals. Even though medical education is expensive, it is still strongly urged that the student find means for his support other than through outside work requiring any considerable daily time. Should private resources fail, most schools have scholarships or loan funds available.

The pamphlet also advises that women can and do succeed in the field of medicine. Last year 5.3 per cent of the medical school freshmen were women. They are admitted to all but the Dartmouth Medical School and the Jefferson Medical College. Among the approved medical schools in the country is one, the Woman's Medical College of Pennsylvania, organized in 1850, which exists exclusively for the education of women in medicine.

Until 1950, the Council on Medical Education did not classify any schools outside the continental limits of the United States and Canada. Since then, a very few foreign medical schools have been approved as providing education comparable to that of the Grade A American schools. Since licensure varies in individual states, and because this is the responsibility of the individual board within each state, students should investigate the requirements of those states in which they hope to practice before seriously considering attendance at a foreign school. Almost all state licensing boards require the candidate for licen-

sure to be a graduate of a medical school approved by the council or included in the membership of the Association of American Colleges. Basic science examinations are required in 19 states, the District of Columbia, and Alaska. The National Board of Medical Examiners, organized in 1915, is now recognized as giving an acceptable examination for licensure in all states except Arkansas, Florida, Indiana, Nebraska, and Texas.

The Council on Medical Education and Hospitals of the American Medical Association offers these pamphlets and other information on the subject to anyone wishing to write a request. The address is 535 North Dearborn Street, Chicago 10, Illinois.

### EDUCATION IN HOME OR HOSPITAL

Physicians are well aware of the fact that each year hundreds of school age children will have their schooling interrupted by illness and physical injuries, and that many others will never be able to attend school because of crippling pathological conditions. These interruptions or denials of school attendance often have a detrimental effect upon the child's mental health and tend to impede the period of convalescence.

For some years, schools have sought to fill this educational gap by sending a teacher into the home or hospital to give individual instruction at each child's particular level of achievement. This procedure has been met with eager approval by the children involved and by their parents and teachers. The success of this type of educational adjustment was recognized by the 1951 Kansas legislature to the extent that funds were made available for this service through the Division of Special Education, State

### SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

John C. Artman, M.D.  
2005 Lincoln Drive  
Hays, Kansas

Rex C. Belisle, M.D.  
Plainville, Kansas

Laurel G. Case, M.D.  
316 South Factory Street  
Enterprise, Kansas

Thomas W. Critchfield, M.D.  
4509 West 74th Place  
Mission, Kansas

William J. Kridelbaugh, M.D.  
Route 4, Radio Lane  
Arkansas City, Kansas

James G. Lee, Jr., M.D.  
731 Ann Avenue  
Kansas City, Kansas

Hampton W. Shirer, M.D.  
5321 West 50th Street  
Mission, Kansas



Department of Public Instruction. Since 1951, the sum of \$20,000 has been available each year to help the public schools finance homebound and hospital instruction.

Homebound instruction has some obvious limitations. The different types of disabilities permit various amounts of activity during the period of convalescence, with some permitting none whatever. Then too, homebound teaching is limited from an educational point of view. It cannot replace regular school attendance; it can only prevent serious academic lags when the child is well enough to return to school.

During the school year 1952-53, 44 school districts applied for and received state aid under this homebound program. Reimbursements totaling \$9,629.42 were made to these school districts and brought qualified teachers to the bedsides of 115 homebound or hospitalized children. Many of these children were brought under the program by virtue of the excellent cooperation given to the Division of Special Education by the Kansas Crippled Children's Commission. The physical disabilities involved, according to the physician's diagnosis for each child, are listed below in rank order, the most frequent causes being listed first: delicate heart condition and rheumatic fever, poliomyelitis, cerebral palsy, epilepsy, kidney infection, muscular dystrophy, spina bifida, bone fracture, chorea, respiratory disease, infectious disease, brain tumor, burns, hernia, incontinence, and allergy.

This is a growing service, and it is believed that many more children will be included under the program during the current school year. State aid was not claimed for some children, and the actual number served in this manner is somewhat above that listed. The goal of bringing instruction to every homebound child in Kansas will not be reached, however, until knowledge of this program spreads to all professional fields concerned. Because of his personal association with physically handicapped children, the physician is in an excellent position to inform parents that this service is available. The parents, in turn, can cooperate with their local school districts in working out necessary details.

The basic points involved in receiving state aid for homebound instruction are as follows:

1. A physician's statement is required, saying that the child's physical condition is such that he should remain out of school for a minimum of three months and also that, in his opinion, the child is able to receive instruction at home or at a hospital.

2. The teacher must hold a valid Kansas teaching certificate.

3. Four dollars per week is paid to the school district for each homebound child receiving a minimum of two hours of instruction per week (on two

different days, or as directed by the attending physician).

4. Seven cents per mile is paid for travel actually and necessarily incurred by the teacher up to \$50 per child.

5. Necessary forms are supplied by the Division of Special Education. Reimbursement is paid to the school district at the end of the school year.

The regulations under which this program operates prevent the approval of any child other than those who are physically unable to attend school and who are termed as educable. The lower limit of educability has been generally accepted as an I.Q. of 50, although other factors are considered. This service is not intended for those children who have been excluded from regular school attendance because of disciplinary reasons or for reasons of low mentality.

The Division of Special Education would like to encourage all physicians who are treating homebound children as described above to let parents know about this program. If parents or school administrators wish to obtain the complete particulars, they may do so by writing

John H. McCormick, Supervisor  
Homebound and Hospitalized Program  
Division of Special Education  
State Department of Public Instruction  
Topeka, Kansas.

## NEW HONOR TO K.U.

A new honor came to the University of Kansas School of Medicine recently through an announcement that the institution was ranked in first place nationally in the field of postgraduate medical education. That status was won statistically. Postgraduate enrollment in Kansas last year was larger than that of any other school in the nation.

Although the value of education in different schools offers no possibility of comparison, this statistical superiority is revealing. It shows that Kansas physicians appreciate opportunities afforded them for keeping abreast of the latest developments in medicine, that the school is offering courses that are attractive and practical, and that the physicians and the school together are determined to keep Kansas ranking high in all matters pertaining to medicine.

The following tribute to the school was published in the *Kansas City Star*, September 28, 1953.

The up and coming University of Kansas School of Medicine has just received a first place ranking in a field that will benefit more persons than university victories on the football gridiron. It now

leads the nation in the field of postgraduate medical education.

Kansas, second ranked last year, has just passed Minnesota in this endeavor. The rating is by the American Medical association in its annual report on medical education in the United States and Canada. It is based on the number of physicians receiving postgraduate instruction not for degree work.

The Kansas school offered instruction to 2,143 persons in the year ending June 30, the A.M.A. reports. This included postgraduate service to 1,603 physicians, mostly from Kansas but also from twenty-five other states, and other courses to 155 laboratory technicians, 172 nurses and 213 lay persons in hearing, speech and cerebral palsy instruction, all at the medical center.

Training of doctors included 350 taking circuit courses given once a month in eight Kansas cities and two in Missouri; 1,239 attending 3- to 5-day courses at the school, and fourteen taking in-residence training of one month to one year.

The expanded courses follow the university's policy of attempting to make the best in medicine available to all the people. It was fitting that the announcement of the first place ranking should be made by Dr. W. Clarke Wescoe, dean of the school, at ceremonies attending the unveiling of the cornerstone of the new Continuation Center. This building will house visiting doctors, provide a theater for teaching and serve as a student union center—all in the name of further progress.

## ANNOUNCEMENTS

A competitive examination for appointment of medical officers to the regular corps of the United States Public Health Service will be held on February 2, 3, and 4, 1954, at a number of points throughout the United States. Applications must be received no later than December 24, 1953. Information and application forms may be secured from the Division of Commissioned Officers, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C.

The eighth annual University of Florida Mid-winter Seminar in Ophthalmology and Otolaryngology will be held at the Sans Souci Hotel, Miami Beach, the week of January 18, 1954. Lectures on ophthalmology will be given on January 18, 19, and 20, and the following three days will be given over to lectures on otolaryngology. A midweek feature will be the midwinter convention of the Florida Society of Ophthalmology and Otolaryngology on January 20, with a banquet that evening.

The American Academy of General Practice will hold its sixth annual scientific assembly, March 22-25, in Cleveland, Ohio. Headlining the program will be Sir Alexander Fleming, Dr. Howard Rusk, and Dr. E. J. McCormick.

The American Society of Anesthesiologists, at its meeting last month, chose Kansas City as the site for its 1956 annual session.

A three-day institute on emotions and the female reproductive system will be presented at Winter V.A. Hospital, Topeka, December 10-12, by the University of Kansas School of Medicine and the Menninger Foundation. Any practicing physician is eligible to attend, but enrollment will be limited to 80. Information may be obtained from Mr. Harold G. Ingham, Extension Program in Medicine, University of Kansas Medical Center, Kansas City 3, Kansas.

A 16-day medical and surgical congress will be held in South American cities and aboard ship under the sponsorship of the Pan American Medical Association. The group will sail from New York on January 6 and will have stops at meeting points in Caracas, San Juan, Ciudad Trujillo, St. Thomas, and Havana. Dr. Charles Crocker, San Francisco, is executive secretary of the association.

The Sixth Annual Mid-West Cancer Conference will be held at Wichita, April 1 and 2, 1954.

### MILITARY PHYSICIANS REDISTRIBUTED

Redistribution to the Navy and Air Force of approximately 500 volunteer doctors recently commissioned in the Army is being undertaken, the Department of Defense announced recently.

The large number of available volunteers is due to the number of physicians who, shortly after the Doctor Draft Act was extended for an additional two years and after the August draft call was announced, decided to volunteer for service now rather than wait until called by their draft boards.

The Navy and Air Force recently have not accepted volunteers since both services temporarily had a number of physicians adequate to meet their needs. Because of scheduled losses, however, these services are now in position to use some of the Army's volunteers.

Insofar as possible, the redistribution will be accomplished by voluntary interservice transfer.

Make hotel reservations now for the annual session, Kansas Medical Society, Topeka, May 2-6, 1954.



# Tumors of the Eye

## Tumor Conference\*

Edited by H. I. Firminger, M.D., and Irwin Joffe, M.D.\*\*

Dr. Helwig: Today Dr. Larry Calkins has kindly consented to discuss tumors of the eye and illustrate his discussion with three cases.

Dr. Calkins: The fundamental classification of most tumors is on a histogenetic basis. The anatomic location and histologic and clinical behavior, however, are qualifying factors, and they are particularly valuable in classifying intraocular tumors. Unfortunately, the histogenesis of most primary intraocular tumors is unsettled. With few exceptions, however, tumors of the retina and of the uvea have been ascribed to neuroectodermal origin.

At one time all pigmented tumors of the uveal tract were believed to arise from branching pigmented cells, probably melanoblasts, which were regarded as of mesenchymal origin. Therefore, they were called melanosarcomas, and in some localities they would still be called that. In the last few years, considerable doubt has been raised concerning the histogenesis of melanomas, and the consensus of opinion, as far as I can find out, now points to the fact that these tumors are not of mesodermal origin; hence, the deletion of the term sarcoma.<sup>1</sup> We now speak mostly of malignant melanoma of the eye—the choroid, the ciliary body, or the iris. Of more recent origin is the hypothesis that melanomas, along with other tumors, may arise from Schwann cells.<sup>2</sup>

Malignant melanoma is the most common intraocular tumor. It is well known that malignant melanomas in the skin arise from nevi that may have remained dormant for years. They suddenly begin to grow and undergo malignant change. In the uvea, as well as in the nevi of the skin, this change is seldom manifest before adult life. The fact that malignant transformation takes place in benign tumors known to have been present for a long time, sometimes from birth, suggests that malignant melanoma arises as a congenital growth, probably from pigment cell clusters or rests.

Once a malignant melanoma has arisen, how do we classify it? Or, more fundamentally, what is the value of classification? Perhaps it gives us an opportunity to prognosticate a little bit and help both the patient and his family. Ordinarily, we divide malignant melanomas into five groups. This is done on a histogenetic basis, and when possible by cells or cell types. Briefly, the groups are as follows.

The most common malignant melanoma is a spindle cell variety. These spindle cells may be divided into two groups, type A and type B. Type A is characterized by a cell with a narrow, oval nucleus and an indistinguishable, or at best barely distinguishable, nucleolus. There is frequently a line or fold extending the length of the nucleus. Type B is a spindle-shaped cell with a more robust oval nucleus and a prominent nucleolus (see Figure 2).

The third group is the fascicular malignant melanoma; and, as the term signifies, it is usually composed of both A and B type spindle cells arranged in a fascicular fashion.

The fourth group is the epithelioid tumor. In this group, the cells are round or polygonal with a large nucleus and a prominent nucleolus. There is abundant eosinophilic cytoplasm and usually a noticeable cell membrane.

The fifth and probably the largest group of tumors is composed of those which are called mixed, simply because each tumor consists of more than one type of cell or pattern. Perhaps 50 per cent of malignant melanomas fit into this group.

As we asked a minute ago, why classify? Well, on a histologic or histogenetic basis alone, the prognosis of malignant melanoma of the eye is materially clarified. For instance, spindle cell tumors, in spindle cell A group particularly, on a rather large series of cases with five-year followup showed 11 per cent mortality, while the epithelioid cell type showed 67 per cent mortality.<sup>3</sup>

There are two other procedures that we commonly employ in the laboratory to help determine the prognosis of the individual malignant melanoma. The first of these procedures is to stain them with a silver stain to study their content of argyrophilic fibers; those which take up considerable silver are thought to be less malignant, and those which take up very little silver, more malignant. The second feature that is commonly used in trying to prognosticate, is the degree of pigmentation of the malignant melanoma. Although this is accorded less weight, nevertheless, it is said by some to be important. Those tumors with the greater amount of pigment are considered more malignant than those with less melanin pigment.<sup>3</sup>

Our first case today is one of malignant melanoma in a 67-year-old white man. While he was in Lima, Peru, he was stricken with pneumonia. He noticed at this time that he had poor vision in one eye. He

\* Cancer teaching activities aided by a grant from the National Cancer Institute and the Kansas Division of the American Cancer Society.

\*\* Trainee of the National Cancer Institute.

recovered rather slowly from his pneumonia, and his vision did not improve, and when he finally was seen he was told he had an infection in his eye which, with the treatment for his pneumonia, would be cured. Since the eye failed to improve, he promptly made arrangements to come home. On his arrival in New York, he visited the offices of a prominent ophthalmologist, and very quickly the probability of intraocular tumor growth was brought to his attention. Because of his history of systemic illness, and because the tumor was situated in the posterior segment of the eye, he was examined thoroughly to exclude the presence of an extraocular primary tumor, but no other tumor was found. Enucleation was recommended, but the patient elected to postpone operation until his vision deteriorated to the point where he was unable to see a chart; at that time he was readmitted for enucleation.

Upon gross examination of the enucleated eye, it was noted that the retina covered the tumor completely and did not contribute to the tumor growth. The tumor had intervened between the retina and underlying choroid and had thus brought about retinal separation. This had a mushroom or wheat sheaf appearance which is rather characteristic of these tumors (Figure 1). In some instances, the retina may be eroded by the tumor, but it is not a retinal

growth; this is a primary choroidal tumor. Microscopically, the tumor is composed of spindle-shaped cells, and at two points the tumor has broken through the sclera. The retina is intact for the most part, but there is some subretinal fluid, and tumor growth involves the retina at one point. Endothelial lined vascular spaces throughout the area of tumor involvement account for early dissemination of this growth as it spreads by the blood stream. This is primarily a spindle cell A variety, and one can see the linear fold down the center of the long axis of the nucleus of the cell. Figure 2 shows an area of type B cells



Figure 1. Primary malignant melanoma of posterior portion of eye with collar-button shaped tumor causing elevation and detachment of overlying retina. X 3. Hematoxylin and eosin.

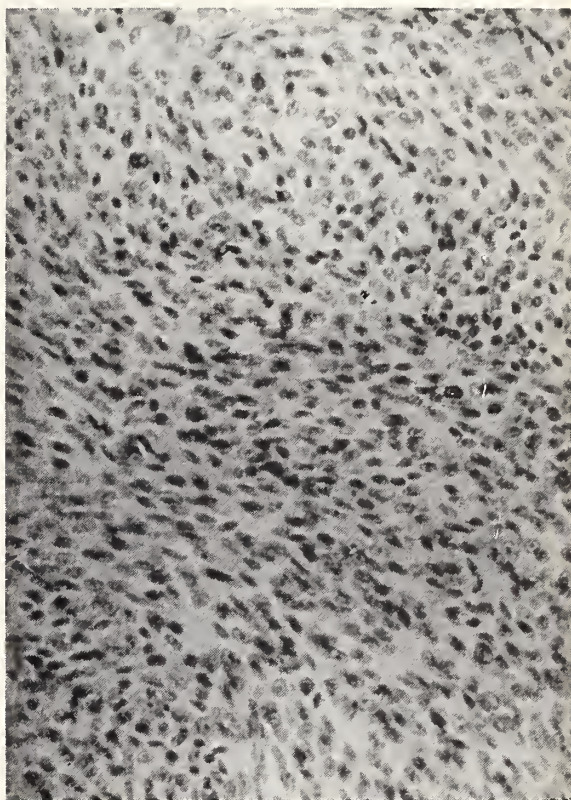


Figure 2. Microscopic pattern of malignant melanoma characterized by interlacing bundles of spindle shaped type B cells with prominent nucleoli. X 235. Hematoxylin and eosin.

arranged in a fascicular pattern; therefore, this tumor would be classified in group 3.

Dr. Helwig: There are only a few points that I think I would like to emphasize, that Dr. Calkins has brought out very well; that is, that the pathologist is frequently asked about the prognosis. And I think we can start out by saying that in melanomas of the eye, generally, the over-all picture is much better than in malignant melanomas arising elsewhere, but the overall picture is a 50 per cent five-year arrest. I believe, as Dr. Calkins has pointed out, one can go even further by studying the cell type and getting even better prognostic outlooks for certain of these tumors. The Wilder stain, as worked out by Mrs.



Wilder some 18 years ago,<sup>4</sup> is still used rather extensively, and when most of the cells show reticulum about the cell the outlook is much better than when there is no reticulum present. It has been postulated that the reticulin might act as a barrier to metastasis into blood vessels.<sup>5</sup> The fact remains that patients with tumors containing abundant reticulum seem to have a somewhat longer survival time.

Dr. Calkins: The next case is an example of the second most common intraocular tumor, stemming from undifferentiated cells of the retina; that is, the retinoblastoma. At one time, such tumors were all called gliomas. This resulted from their location and their manner of growth. When they extended behind the retina they were called exophytic tumors, and when they extended in front into the vitreous cavity they were called endophytic tumors. Those terms are now obsolescent. The endophytic tumors are said to arise from the inner nuclear layer of the retina; the exophytic tumors, similarly, from the outer nuclear layer of the retina. Actually, most of the tumors, when sectioned serially, go in both directions. Synonyms for retinoblastomas now most commonly in use are neuroepithelioma and glial retinoblastoma.

It is essentially a tumor of childhood and is often observed at birth. It usually appears in children less than five years of age. It is extremely rare after ten years of age. There seems to be no sex or race distribution, but familial occurrence is common. One paper<sup>6</sup> points out that more than half the offspring of affected parents show the tumor. I have seen three children out of five in a family afflicted with this tumor. Approximately 50 per cent of patients die within one year of the time of the diagnosis. Death usually occurs from extensions along the optic nerve. We routinely examine sections of the nerve to be sure the tumor has not reached that point. The optic nerve extension progresses to involve the brain, which supports rapid growth of this type of tumor. Retinoblastomas tend to seed intraocular surfaces. This is similar to tumors of the central nervous system, particularly those that involve the brain stem, which may implant in the spinal canal. Retinoblastomas may invade all of the optical tissues, along the nerve, and through the lymphatics, and rarely they metastasize by way of the blood stream.

Our second case is that of A. R., a 2-year-old white boy who, at the age of 14 months, developed convergent strabismus. Fundoscopic examination disclosed an enlarged vein in the retina and retinal separation. The physician immediately suspected an intraocular tumor. Transillumination was carried out and was found to be decreased. This is not necessarily the case in an unenucleated tumor, however; sometimes the transillumination is normal. Enucleation was initially refused, and finally when the boy was 23 months old, because the eye had become red and irri-

tated, the parents consented to enucleation. No glaucoma had developed, but it frequently occurs and is the source of much pain.

Examination of the surgical specimen showed what we interpreted as the origin of the tumor in the retina (Figure 3). Tumor cells were found in the

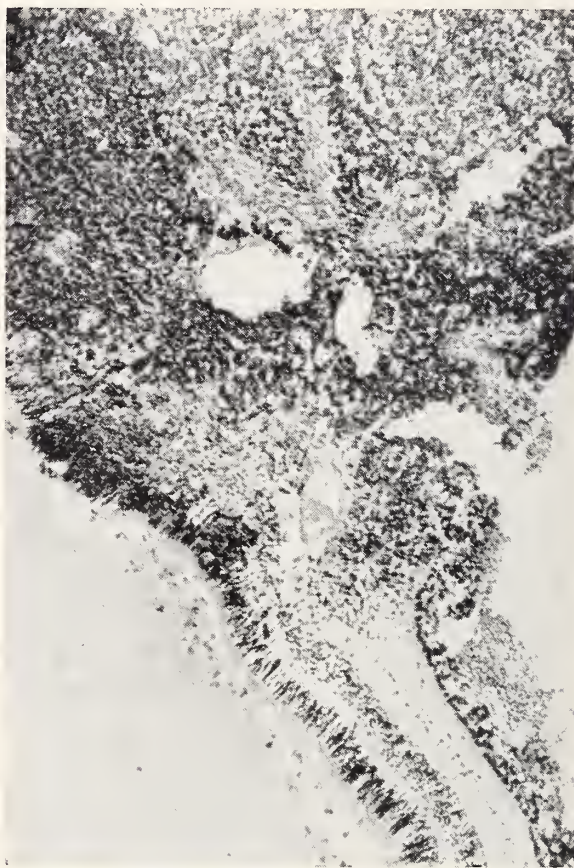


Figure 3. Retinoblastoma arising in the retina with hemorrhage beneath the retina. X 70. Hematoxylin and eosin.

ora serrata and growing down into the optic nerve. Small deposits of tumor tissue were seeded at various points within the eye. Microscopically, the distinctive thing about this tumor is the formation of rosettes. According to Flexner<sup>7</sup> and Wintersteiner,<sup>8</sup> this is an attempt to form rods and cones. In this tumor we see false rosettes characterized by the radial arrangement of columnar cells around a central blood vessel. There are also true rosettes; these are radially arranged cells without a central blood vessel and centrally arranged processes extending through what appears to be an internal limiting membrane.

Another characteristic of these tumors is their rapid growth which may exceed their blood supply, as in this case, with resulting foci of necrosis and hemorrhage. When this tumor is suspected, and if it is far advanced, as in this case, an x-ray of the eye will often show radiopaque calcium deposits in the eye known as Johnson's plaques.

Whereas malignant melanomas extend via the blood stream and seldom, if ever, will extend locally by direct extension, retinoblastomas have many different means of growth. They spread through the eye along the optic nerve, by vascular spaces, by seeding, by direct extension into surrounding structures, and by way of lymphatics throughout that area.

Dr. Helwig: In the case of retinoblastomas, again the pathologist is often asked about the prognosis, and again he can tell these people that a fair percentage of them will survive, possibly as high as 50 per cent, if the tumors are removed early. The question of consanguinity has been brought up regarding this second group of tumors; we do occasionally see cases in which no ancestor, as far as careful genetic investigation shows, has ever had one of these tumors. Certainly it would seem that in a small percentage, perhaps some other factor than a recessive gene may be at work.

I recall when I was in medical school there was a very excellent summary made by Bell<sup>9</sup> in 1922, in which he reviewed all the cases of retinoblastoma that had appeared in the literature up until that time. He presented some case histories that I think are of great interest. In one family, in which no members of the family had had tumors—this family, I believe, had 16 siblings—well over 50 per cent developed it, and investigation of that family revealed a paternal uncle with the disease. So physicians have another duty, that of warning the family about the 50-50 chance, or better, that siblings will develop similar tumors of the eye. I think a doctor who can carry that point at least has discharged his responsibility in preventive medicine.

Would you tell us about the third case, Dr. Calkins?

Dr. Calkins: Although primary tumors of the eye are by far the most common, the choroid of the eye and the remainder of the vascular coat of the eye, namely the ciliary body and the iris, are rather likely sites for the location of metastatic foci of infection or tumors which spread by the blood stream. We know that the brain and the eye are not infrequently locations of single metastatic foci. The explanation that is commonly given is found in a paper by Dr. Batson,<sup>10</sup> who described a paravertebral venous circulation by which tumors from the thorax and abdomen may reach the skull, the brain, and thus the eye without having to go to the lung. Metastatic tumors generally are unilateral; however, several of those present at this conference, I believe, have seen a bilateral metastatic tumor. They appear and grow principally as flat tumors in the posterior segment of the eye. They ordinarily grow around the optic nerve and are readily visible with the ophthalmoscope as metastatic growth, or at least a flat retinal separation. They usually infiltrate laterally. They don't grow forward

like the malignant melanoma or the retinoblastoma.

Multiple metastatic sites within one eye also occur: I have seen one eye with three separate foci. Metastasis to the optic nerve is also reported,<sup>11</sup> but it has been quite rare. Occasionally metastatic carcinoma appears in the eye when it doesn't appear any other place. It may occur in the iris, it may occur in the ciliary body, and it may occur in the retina, but for the most part it probably will appear in the choroid or in the posterior part of the eye. Once tumor is discovered in the eye, it is a hard thing to convince a patient that he must lose his eye, when he still has a fair amount of vision remaining in that eye.

Breast and lung predominate as primary sites giving rise to metastases to the eye. The third case serves to illustrate this point. It is the case of a 31-year-old nurse, who, at age 29, had a radical mastectomy for carcinoma. Two years later she reported with poor vision in one eye, and a flat retinal separation was noted. No other metastatic focus could be found, and on this basis an enucleation was carried out.

Microscopic sections of the enucleated eye show a metastatic carcinoma of the breast. It is in the vascular choroid coat of the eye, and the retina is not involved. It extends up to the ora serrata. If you put the sections from the original tumor of the breast and the sections from this mass in the choroid together, they are almost identical. As Dr. Helwig pointed out to me when I was in school, metastatic foci don't necessarily represent the clinical picture or the appearance of the histologic picture of the primary tumor, but in this instance the two are very similar.

Dr. Helwig: I have had practically no experience with metastatic lesions of the eye. I have seen only two in 30 years. Of course I don't examine many eyes. We don't see many enucleations in the institutions where I work. But both of these were metastatic from the breast. One of them happened to be a sister at St. Joseph Hospital, about 25 years ago. It might be mentioned that usually when one encounters metastatic lesions in the eye, it is in the stage of terminal events. However, cases have been recorded in which the removal of the eye was the first sign to point toward the primary lesion, and the primary lesion was discovered after the eye was removed. Or, following discovery, careful search revealed the presence of an unsuspected primary tumor. The breast, the lung, the stomach, the intestine, the thyroid, and the prostate have all yielded metastatic lesions in the eye; and, strangely enough, the left eye is more frequently involved than the right, and usually the temporal side. They are practically all posterior. Bilateral ones, as Dr. Calkins mentioned, have been reported, but I have never seen one. If I had been connected with an eye institute, I undoubtedly would have seen many more.



Dr. Lemoine, would you comment on this unusual condition?

Dr. Lemoine: I can recall one patient with metastatic carcinoma of the eye recognized only after an enucleation. This patient was first seen with a retinal separation and was operated upon without success. After approximately four months, she developed pain with an absolute glaucoma requiring enucleation. Histological study of the eye revealed metastatic carcinoma from a primary growth in the breast.

Metastatic carcinoma to the eye may be more common than believed because terminal carcinoma patients do not have routine eye examinations. In patients with metastatic lesions to the eye, one should consider radiation therapy. We have had several patients who had marked regression of intraocular lesions following deep x-ray therapy. Not only are the lesions reduced in size, but visual improvement frequently occurs. If no other metastatic lesion is found, then enucleation perhaps is the procedure of choice; however, if there are other tissues involved, I feel that radiation therapy is the best form of treatment.

Dr. Boley: Has anyone tried testosterone on patients with metastatic tumors of the breast in the eye?

Dr. Lemoine: I don't think anybody has.

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#### STUDY OF BLOOD PRESSURE

A group of physicians in New York City, working under the auspices of the New York Heart Association, is soliciting information from doctors throughout the nation in an effort to compile statistics on blood pressure in people who are 65 years of age and over.

Questionnaires have been mailed to 17,000 physicians, asking for data on six patients seen recently. Since the names of the 17,000 were obtained from the A.M.A. to secure nationwide representation, a number of Kansas physicians have undoubtedly been asked to help in the study. Those who have not re-

ceived questionnaires and are interested in assisting may receive information by addressing a request to Blood Pressure Study, 11 East 100th Street, New York 29, New York.

## THE KANSAS PRESS LOOKS AT MEDICINE

*Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.*

#### HIGH PRICED PILLS

It would be interesting to see a "Cost of Being Sick" index, with a comparison of the cost of being sick today with what it was a few years ago.

When father looks over the family bills it appears the cost of being laid up today is two or three times as much as it was only 10 or 15 years ago. Doctor bills are up, hospital charges are substantially more, but the big jump has been in the cost of drugs and prescriptions where pills, powders and lotions are bringing fabulous prices.

Doctors as a group seem to be doing quite well financially, but not many patients find fault with the medic's improved financial status: Only those who have been gipped unmercifully on an operation, those bent on a change to socialized medicine, those poor frantic souls who have been unable to get an unconcerned doctor to make a home call and those who have fretted and fumed for hours in the outer office of the doctor who refuses to make appointments.

But the doctor is a piker in his charges in comparison with the prices of the pill sellers. What has happened to the cash registers on most prescription counters is scandalous, and the sort of thing that makes men listen more attentively and sympathetically to the Loreleis of collectivism. If socialized medicine does come to America anytime soon, the men who have levied the fantastic prices on drugs and prescriptions will be more responsible than the doctors.

Every business man and every professional man is entitled, and should be encouraged, to make a fair profit. But no group of men licensed by the state and limited in number should be allowed to make more than a normal profit. The overall profit in drugs, from the time they are processed and manufactured until they leave the pharmacists' hands,

must be well out of line with the profits in other lines of business. The prescription business seems to be quite profitable generally and, if the big drug manufacturing concerns are not cleaning up, the local pill seller is more to blame. For sure, someone is to blame when six or eight little powdered pills have a price tag of \$5, and a simple mix of calomine lotion under a prescription label costs twice what it brings in an original manufacturer's bottle.

Why is it that drugs which are manufactured and packaged by American drug firms are sold in foreign countries at prices substantially less than what they are sold for in any drug store in the United States? The ingredients supposedly are the same, and the package and the label are the same except for a foreign language used in the dosage instructions. The only difference is the price; more at home than overseas.

It is not too uncommon for a sick person to spend a week in a hospital and to discover the cost of his prescribed antibiotics and other drugs is more than the entire hospital bill. Frequently the drugs cost three or four times as much as the amount due the doctor for his care and attention, and yet doctors' bills usually are the basis for arguments for socialized medicine.

Doctors are not blameless. They sometimes own "a piece" of a pharmacy counter where higher prices result in a larger cut for the doctor. That is true with some doctors in Lawrence.

There has been the partially successful fight on self-medication which has directly contributed to the increased cost of being sick. Such proven good products as Cuticura, Resinol, Mentholum, Pepto-Bismol and aspirin, which are frowned upon by many professional men, cost only a fraction of the charge for the box of powder or tube of ointment issued under the doctor's prescription through the drug store.

Prices of some of the newer "wonder drugs" have remained terrifically high. The drug manufacturing house and the prescription seller usually get the same percentage of profit markup whether the little capsule sells for 10 cents or \$1. With the price at a dollar a pill, the seller theoretically makes 10 times as much. And the patient is instructed to take a specified number of pills, regardless of whether they cost \$1 or 10-cents each.

A "Cost of Being Sick" index would apply about the same to everybody because 10 aureomycin capsules cost the sick millionaire exactly the same as the poor down-and-outer who has a wife at home with the same infection. The down-and-outer might spend two or three hours trying to save a dollar on his food or clothing purchases, but when someone is sick at his home he doesn't quibble over price. He

takes whatever is prescribed at whatever the drug seller wishes to charge.

At the butcher shop the wealthy man buys choice sirloin for \$1.10 per pound. The man in more modest circumstances would like to buy a cut off the same loin but his finances are limited. So he buys hamburger at 39 cents per pound. In all of his purchases, clothes, lodging and furniture, he can select according to his ability to pay. But at the prescription counter he pays the same price as anyone else.

He will pay whatever the seller asks for drugs, but he doesn't always like what he is forced to pay. Somehow, he won't argue with his doctor or his druggist like he will argue with his butcher, but he would approve of socializing medicine before he would want to socialize his meat market.

The American Medical Association spends several hundred thousand dollars a year in fighting socialized medicine, with most of the attention directed to the lawmakers in Washington.

The doctors might more wisely spend some of that money in trying to make sure the people of America are getting a fair break on the cost of being sick.—*Lawrence Daily Journal World*, September 16, 1953.

## MIRACLES COME HIGH

The Lawrence Journal-World is aroused over the high cost of being sick. It places the blame on the man behind the prescription counter in ringing words . . .

Such strong statements as these cannot be allowed to pass without dissent. Druggists rarely are encountered in the poorhouse, and I do know one who owns a Cadillac. But he is getting his sixth year of service out of it, and his percentage of markup is what it has been for 30 years.

It is not the pill sellers who are the villains in the piece. The high cost is a part of the new miracle age in medication and of the public's new unlimited belief in miracles.

In scientific, as differentiated from religious fields, miracles come high. Each new wonder drug, whether it is produced as pill, powder, or elixir, when it first is introduced, is manufactured in minute quantities with fabulous unit costs. In addition there are usually fantastic research expenses which must be recovered.

So the first doses of the new painkillers are necessarily sold at prices that tend the purchasers to cry, "Robber." But so great has become the faith in cure-alls that if any new one comes from a reputable source, despite the fact it is still to be mass-tested, many doctors prescribe it. And if the doctors don't, the patients demand it.



Increased and simplified production fast brings down the price of one after another of the cillins, mycins, and moulds. Those who, like the *Journal-World*, can't swallow the high introductory prices, should swallow a couple of aspirins. In many more cases than not, they would get well just as soon.—*Hutchinson News-Herald, September 18, 1953.*

## ACTIVITIES OF MEMBERS

Dr. Ronald Garst, Satanta, left last month for India where he will serve as a medical missionary for the next five years. The work assigned to him is the teaching of orthopedic surgery.

Dr. L. Murray Bowen and Dr. Lewis L. Robbins, both on the staff of the Menninger Foundation, Topeka, were speakers at a meeting of the Mid-Continent Psychiatric Association held in Kansas City late in September. Dr. Bowen spoke on "Psychotherapy in a Guidance Center," and Dr. Robbins described the program of the foundation's day hospital.

Dr. Frederic B. Emery, Concordia, became a fellow of the International College of Surgeons at a meeting held in New York last month.

Dr. Howard E. Snyder, Winfield, was listed on the program of the clinical congress of the American College of Surgeons, Chicago, October 5-9, as a collaborator in a panel discussion on thoracic surgery. Dr. LeRoy A. Calkins, of the University of Kansas Medical Center, took part in the program on obstetrics and gynecology by presenting a paper, "Injuries of the Cervix and Lower Uterine Segment Influencing Abortion." A team from the University of Kansas Medical Center, Dr. Stanley R. Friesen, Dr. Charles H. McCroskey, and Margaret Roady, presented a study on "Wound Bleeding during Experimental Transfusion Reactions in Isoimmunized Dogs."

Dr. Thomas R. Hood, secretary of the Kansas State Board of Health, and Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, were speakers at a recent meeting of the Kansas Tuberculosis and Health Association held in Kansas City.

Dr. Sam Jones and Dr. R. W. Fernie, Hutchinson, announce that Dr. R. M. Jastram, formerly of Minneapolis, is now associated with them in practice. Dr. Jastram is a graduate of the University of Nebraska College of Medicine.

Two Garden City physicians, Dr. L. O. Armantrout and Dr. John W. Turner, have formed a partnership for the practice of medicine and surgery. Dr. Armantrout has been practicing in Garden City since 1937, and Dr. Turner has been there since 1947.

Dr. R. E. Stowell, director of cancer research at the University of Kansas Medical Center, outlined the work of the department at the state convention of Beta Sigma Phi sorority held in Kansas City in September.

Dr. Norman B. Fall, who has been practicing in Winfield for 27 years, has announced his retirement and plans to move to Colorado Springs. His practice in Winfield is being taken over by Dr. R. Burnley White, formerly of Hanover.

Dr. C. Joseph Kurth, Wichita, became president of the Mid-Continent Psychiatric Association at a meeting held in Kansas City in September. Dr. Frank F. Merker, Topeka, was elected secretary-treasurer.

Dr. Winstan L. Anderson, Atchison, recently completed a postgraduate course in surgery at the Postgraduate Medical School of New York University-Bellvue Medical Center, New York.

Dr. Harold Jones, Winfield, described research in multiple sclerosis before a meeting of persons in Iola interested in that disease. The meeting was held in September.

Dr. Andre Baude, Topeka, took office last month as president of the Kansas Trudeau Society.

Dr. C. F. Taylor, superintendent of the State Tuberculosis Sanatorium at Norton, received his student pilot's license last month after his first solo flight.

Dr. William L. Warriner, who has practiced for 65 years, 55 years in Topeka, was the subject of a feature story in the *Topeka Capital* on October 4. He is the only surviving charter member of the Shawnee County Medical Society.

Dr. Joseph D. Noshpitz, chief of children's service at Topeka State Hospital, was principal speaker at a mental health clinic held at Sedan on September 26.

Dr. Murray C. Eddy, Hays, and Dr. Mahlon H. Delp, of the University of Kansas School of Medicine, represented the medical profession as members of a panel which discussed "What Are Nurses Doing?" The discussion took place at a public meeting held in Topeka on October 7 as part of the convention program of the Kansas State Nurses' Association.

Dr. Kenneth L. Lohmeyer, Emporia, is representing the Lyon County Medical Society in the county unit of the American Cancer Society. At the organization meeting held September 29, Dr. Lohmeyer told of the medical society's participation in cancer work.

Dr. Bernard H. Hall, of the Menninger Foundation, Topeka, spoke on "A Sane Mind" before the students of Donnelly College, Kansas City, on October 5.

Dr. Harold F. O'Donnell and Dr. William H. Browning, Wichita, presented a scientific exhibit of plastic renal surgery at the 32nd annual meeting of the South Central Section of the American Urological Association, held in Kansas City, Missouri, September 21-23. Dr. Browning also read a paper, "The Influence of Chem-Therapy and Antibiotics on the Surgical Management of Hydronephrosis."

Dr. Evert C. Beaty, who was recalled to military service at Miramar Naval Air Station, San Diego, three months ago, has been released from active duty and has returned to practice in Parsons.

Dr. James H. Coffman, who was released from service with the Army in September, has begun practice in El Dorado in association with Dr. R. J. Metcalf. He is a graduate of the University of Kansas School of Medicine.

Dr. C. V. Haggman, who formerly practiced in Scandia and moved to Kingsport, Tennessee, recently, was the subject of a feature story in the *Scandia Journal* on October 8.

Dr. Calvert J. Winter, Jr., has returned to the private practice of pediatrics in Kansas City after having spent two and one-half years with the United States Public Health Service.

Dr. John H. Lathrop, Concordia, announces that George Lockett is now associated with him in practice. Dr. Lockett, who has been practicing in Glasco, will continue to be in his office there each afternoon.

Dr. E. Wendell Donald, Caldwell, has gone to Nashville, Tennessee, for a year's resident training in surgery at the Mid-State Baptist Hospital. Dr. Leon F. Kinnan, who has been associated with Dr. Donald during the past six years, will continue to practice in Caldwell.

Dr. R. A. J. Shelley, Coldwater, was in Memphis last month to receive recognition from his alma mater, the University of Tennessee, for having completed 50 years in the practice of medicine.

Dr. Charles S. Hershner, Esbon, who recently visited a number of proctological clinics in Europe, compared the work of those institutions with American clinics at a meeting of the National Proctological Association held in Chicago last month.

Dr. Richard L. Sutton, Jr., of the University of Kansas Medical Center, was co-author of a paper on skin disturbances of the hand published in last month's issue of *Archives of Dermatology and Syphilology*.

The Gelvin-Haughey Clinic, Concordia, announces that Dr. Wayne L. Fowler has joined its staff and will be associated in general practice with Dr. H. B. Stryker. Dr. Fowler, who is a graduate of the Indiana University School of Medicine, had a three-year residency in internal medicine at General Hospital, Kansas City, Missouri, and recently completed a tour of duty with the Air Force.

Dr. H. M. Wiley, Garden City, explained the uses of blood before a community meeting in Garden City last month.

Dr. Byron W. Walters, who has been acting director of the Lawrence-Douglas County Health Board, resigned that position last month when a permanent director was employed, Dr. C. A. McIntyre, formerly of Durango, Colorado.

## COUNTY SOCIETIES

A meeting of the Leavenworth County Medical Society was held at Cushing Memorial Hospital, Leavenworth, in September. Dr. Thomas Rankin presented a paper, "Liver Function Tests in Liver Disease." Dr. Carroll D. Voorhees was accepted as a new member.

Physicians from nine counties were present at a meeting of the Southeastern Kansas Medical Society held at the Allen County Country Club, Iola, on September 16. Dr. Harold H. Jones, Winfield, spoke on "Clinical Significance of Hair."

At the business session, the following officers were elected: president, Dr. D. B. McKee, Pittsburg; vice president, Dr. K. J. Bierlein, Pittsburg; secretary-treasurer, Dr. C. W. Erickson, Pittsburg.

Dr. Alfred M. Tocker, Wichita, discussed traumatic injuries of the chest before the meeting of the Cowley County Medical Society held September 17 at the Arkansas City Country Club.



A meeting of the Tri-County Medical Society was held at Harper on September 16 with Dr. L. C. Joslin, president, in charge. Dr. Karl E. Voldeng, Wellington, presented a paper on cancer of the rectum.

The Nemaha County Medical Society held a business session at Seneca on September 23. Dr. J. H. Gilbert reported on a course he had attended in Topeka on the use of radioactive isotopes in medicine. The group later joined the woman's auxiliary for a social hour.

A meeting of the Shawnee County Society was held at the society building in Topeka on October 5. After the dinner a guest speaker, Dr. Edward Tolstoi, New York City, discussed "The Practical Management of Diabetes Mellitus—15 Years Experience." The following seven physicians were voted into membership: Dr. Robert H. Brooker, Dr. George W. Jackson, Dr. William Rottersman, Dr. Robert S. Terrill, Dr. Victor J. Thompson, Jr., Dr. R. C. Anderson, and Dr. George Mrkva.

Members of the Shawnee County Society were hosts at a reception for nurses held at the Hotel Jayhawk, Topeka, on October 8, prior to the annual banquet of the Kansas State Nurses' Association.

Members of the Finney County Society, meeting on September 21, appropriated \$100 to Dr. Ronald Garst for the purchase of surgical equipment. Dr. Garst is soon going to India to be a medical missionary.

A scientific meeting of the Sedgwick County Society was held at the Lassen Hotel, Wichita, October 13. Dr. Stewart G. Wolf, Jr., of the University of Oklahoma Medical School, spoke on "A Practical Appraisal of Therapy in Peptic Ulcer and Ulcerative Colitis."

A sports event for members of the society was held on September 18, when the doctors competed in a golf tournament and skeet shoot. The day's program was closed with a dinner and the awarding of trophies.

Members of the Cloud County Society were hosts at a meeting of the Golden Belt Medical Society held at St. Joseph Hospital, Concordia, on October 22. The afternoon program consisted of two scientific papers, "Acid Base Balance" by Dr. John L. Lattimore, Topeka, and "Basic Problem of Biliary Tract Surgery" by Dr. E. R. Gelvin, Concordia. Dinner was served, after which there was a business meeting.

A meeting of the Leavenworth County Society was held on October 12. During a discussion on a pro-

posed new county home, Dr. Adolph R. Mueller was asked to conduct a study of medical needs. All members agreed to participate in the fund drive of the American Heart Association by making talks as requested before civic groups. The speaker of the evening was Dr. Andrew D. Mitchell, of the University of Kansas Medical Center, who discussed urologic problems.

#### ARMY RESIGNATIONS PERMITTED

Regular officers of the Army Medical Service may resign and leave the service under a new and more liberal Department of the Army policy, according to a recent release from the Office of the Surgeon General.

Beginning with officers having the longest periods of service, a number will be allowed to resign each month, provided they have met certain service requirements. Officers who have no obligatory commitments to the Army and who have served in the Regular Army for a period of three years are eligible for release. However, if they have served for less than eight years, they must accept reserve commissions.

#### PAMPHLETS AVAILABLE FROM PARKE, DAVIS

A pamphlet containing four advertisements recently published by Parke, Davis and Company, stressing the importance of prompt and proper medical care, is now available from the company. More than 50,000 copies have been distributed. The message of the advertisement cautions against neglect and delay in seeking the physician's help and emphasizes, "In the hands of your physician, you're in good hands."

Mr. Ralph G. Sickels, director of advertising for the firm, said, "We like to think these public service advertisements may be more truly helpful to people than almost any other ad they run across. The messages are the latest in a campaign we started 25 years ago—an effort to make the subject of prompt and proper medical care 'come alive' to the man on the street, the woman in the home. . . .

"We are pleased to get almost daily evidence that these advertisements seem to be nudging people into action—and that the specific examples we are citing about the tragic consequences of delay are helping to generate among people a heightened respect for the professions of medicine and pharmacy."

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# Prognosis in Essential Hypertension\*

Richard M. Glover, M.D.\*\*

Kansas City, Missouri

It is the purpose of this paper to examine the literature to determine, if possible, what the life expectancy is in patients having a benign form of hypertension, be it called essential hypertension, arterial hypertension, hypertensive vascular disease, hypertensive cardiovascular disease, hyperpiesia, or just hypertensive disease.

That hypertension may be benign and compatible with reasonable longevity has been recognized and discussed at some length in the literature since 1913, when Janeway<sup>1</sup> published his article. Yet, in the 40 years that have passed, there have been very few articles which have adequate material to give a sound basis on which to build an evaluation of the prognosis in benign essential hypertension.

There are a few basic reasons for the paucity of facts. The very nature of the disease, by its insidious onset and long duration, makes it often impossible to determine the exact date of onset of an elevated blood pressure. It is suggested that the disease has its onset during early life but is not discovered until symptoms bring the patient to his physician many years later. Many other cases are discovered during a routine physical examination, but in these patients there is again no way to determine when the elevation of blood pressure began.

The long period of time involved with this disease frequently, if not generally, means that one physician does not diagnose and follow it to its termination in a given patient. The patient is seen and moves on to another or other doctors before the end is reached. Often by the time a case is first seen it has reached the terminal stages and therefore gives no true picture of this disease. The picture is complicated further by the inclusion of other diseases or other types of hypertension in nearly all studies found in the literature. The very fact that the etiology of essential hypertension is not known has led each author to set up a different basis on which to present his material. The nature of the disease is such that the family physician usually handles the patients. These men have not, unfortunately, had or taken time to keep complete records or have not individually a significant number of patients to be helpful in the evaluation of this condition.

One of the first extensive follow-up studies to determine the longevity of hypertensive patients was published by Janeway<sup>1</sup> in 1913. His study is a nine-year follow-up of 458 patients, selected from his and his father's practices, who had a systolic blood pressure above 160 mm Hg. The group of patients contained 307 men and 151 women, all of whom came from a well-to-do class and were private patients. At the end of nine years, he found that 46.3 per cent had died and 53.7 per cent were living. Of the men, 53.1 per cent were dead, while only 32.5 per cent of the women had died. He concluded that longevity is better in women than in men when hypertension is present, but that height of blood pressure has very little effect in determining life expectancy. He thought early cardiac symptoms and progressive weight loss tended toward poor prognosis. This paper was of great significance because Janeway was the first to stress the fact that hypertonics might live many years in good health and be completely fit for work, which was contrary to the point of view then held. He emphasized that one should be cautious in predicting a poor prognosis.

May<sup>2</sup> (1925) found, in life insurance reports on 17,760 men and 2,500 women, that 25 per cent of the men and 17.4 per cent of the women had a systolic blood pressure above 140 mm Hg. The mortality increased with blood pressure, so that when the anticipated mortality was put at 100, the mortality was 133.6 at a systolic blood pressure of 141-170 mm Hg., it was 219.6 at a blood pressure of 171 mm Hg. and above, and 827.5 when the blood pressure was above 200 mm Hg.

In 1926, Ehrström<sup>3</sup> published a follow-up study of 252 cases of "nephrosclerosis," finding that the disease on the average lasted 20 years. He stressed that the prognosis is good in the case of essential hypertension, and he mentioned 20 patients who had blood pressures of about 200 mm Hg. for 10 to 16 years and were feeling well. He suggested that the prognosis is poor when hypertension is found in combination with other diseases, especially renal or cardiac disease.

In 1926, Paullin<sup>4</sup> published a follow-up examination of 76 private patients, the number of men and women being equal. He included only cases of "essential hypertension." It should be noted that the average age of the women was about 10 years less than that of the men. After five to seven years

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\* Thesis written while the author was a senior student. Dr. Glover is now interning at St. Joseph Hospital, Kansas City, Missouri.



the mortality was 54.1 per cent for men and 3.8 per cent for women, indicating that hypertension is more benign in women than in men.

Hamman<sup>5</sup> (1928) reported a 10-year follow-up of 314 patients seen in his office. There were equal numbers of men and women, and all had blood pressures of 150 mm Hg. or more. He found that of 8,000 patients' records reviewed, 778 had blood pressures of 150 mm Hg. and higher (more than 7 per cent). From this group he selected the 314 reported in his paper and found that after two years 10 per cent of the group was dead, after five years 30 per cent were dead, and after 10 years 78 per cent had died. Causes of death were: 30 per cent heart failure, 27 per cent apoplexy, 19 per cent uremia, and 24 per cent unrelated causes.

Blackford, Bowers and Baker<sup>6</sup> (1930) found 401 patients having systolic blood pressures of more than 175 mm Hg. from 19,000 patients examined. Sixty-five per cent of these patients were women, and most of them were 50 years of age or older. In 1932, Blackford and Wilkinson<sup>7</sup> published a follow-up study of 202 of these patients who had been followed for an average of 10 years. They found hypertension twice as frequent in women; however, more than half of the women were free of hypertensive symptoms, while the majority of men had symptoms. Their study showed that of the 202 patients followed, 50 per cent were dead; that 79 per cent of the men had died, while only 42 per cent of the women had died. They discovered that 75 per cent of the deaths were from hypertensive disease.

In 1931, Riesman<sup>8</sup> published an excellent paper in which he discussed the history, theories of etiology, mortality, and treatment of essential hypertension. He felt that of the greatest importance in determination of prognosis was basal diastolic pressure and eyeground changes. He felt that heredity is of great importance and suggested that essential hypertension may be a disease of our "American way of life." He was sure that essential hypertension and reasonable longevity are compatible in many cases in spite of the gloomy picture painted by insurance statistics.

Rice<sup>9</sup> published a study of 327 private patients in 1933, all seen in his office, and concluded from his study that hypertension is twice as frequent in women as in men, but that twice as many men die of hypertension as women. He believes that all hypertension begins as the result of arterial spasm, whether it is produced by environmental stimulation, acute toxins, physiologic disorders, or psychic disturbances. During the first 5 to 10 years these reactions may be temporary. Small injuries to the vascular system may and do disappear, but finally, in the majority of cases, widespread vascular changes take place that make certain a "persistent hypertension." He went so far as to suggest that mild hypertensives may outlive

their normotensive brethren because they are under strict medical care which can catch and prevent other diseases such as cancer.

In 1939, Keith, Wagener and Barker<sup>10</sup> published their now famous classification of essential hypertension. This classification has become one of the standard methods of evaluating and classifying hypertensives. It is based on retinal changes found on ophthalmoscopic examination of the eyegrounds.

Group I. Minimal retinal changes consisting in a slight narrowing or sclerosis of the arterioles. Usually benign cases.

Group II. Higher blood pressure and more distinct changes in the retinal arterioles than in Group I.

Group III. Pronounced hypertension, distinct and diffuse sclerotic changes in the retinal arterioles, angiospastic retinitis.

Group IV. Constantly high blood pressure, diffuse retinitis, and, most important, papilledema. These fall into the class of malignant hypertension.

Two hundred nine patients were studied, but the great majority fell into Groups III and IV and, therefore, are of little help in determining longevity in benign essential hypertension.

Daley and associates<sup>11</sup> published a paper in 1943, in which they stressed the importance of the duration of hypertension because of the production of cardiac hypertrophy (left ventricular) and atherosclerotic changes, particularly in the coronary vessels and the aorta. Hypertrophy is related to the degree as well as to the duration of hypertension and usually antecedes significant arteriosclerotic changes. X-ray and EKG are of greatest value in determining these findings and, therefore, the prognosis. In a series of 100 cases, they found cardiac hypertrophy (10 per cent above normal) in 54 per cent of the cases. Evidence of arteriosclerosis of the aorta was present as frequently as enlargement of the cardiac shadow. In the same series they found arteriosclerosis and/or cardiac enlargement in 78 per cent of the cases.

In 1943, Masters and his group<sup>12</sup> published a study of 15,000 persons (8,483 males and 6,366 females) and studied the incidence of hypertension in each decade of life and according to seven classifications based on various blood pressures. They found that at age 60 years a majority of men and at age 50 years a majority of women, are hypertensive. Applying this to the 1940 U. S. white population, they found that 41 per cent of the male and 51 per cent of the female population 40 years of age and over would be expected to have blood pressures of 150/90 or over; at age 50 years and over, the ratio would be 50 per cent in males and 62 per cent in females; at age 60 years and over, 60 per cent in males and 70 per cent in females, and at age 70 and over, 66 per cent in males and 74 per cent in females. It was found that, regardless of classification, the



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1. Greenhill, J. P.: Principles and Practice of Obstetrics, ed. 10, Philadelphia, W. B. Saunders Company, 1951, pp. 103-104; 311; 332.

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incidence of hypertension rose with each decade of age up through the eighth, and in the case of systolic pressure, up through the ninth decade. Systolic hypertension increases more rapidly than diastolic hypertension, resulting in an increased pulse pressure with age.

In 1946, Poul Bechgaard<sup>13</sup> published a complete and extensive follow-up study of 1,000 hypertensive patients. He found that 71 per cent of his group were alive after a period of 6 to 11 years, with a mortality rate of 288 per cent in men and 143 per cent in women, including cases of nephritis where expected mortality was 100 per cent. He felt that these figures presented too dark a picture of the prognosis of hypertension. It was found that the most characteristic feature, regardless of how the material was arranged, was the fact that excess mortality was considerable in the younger years, but diminished strongly with advancing age, and that the mortality for men was about twice that for women. He felt that, in the young, hypertension must be regarded as having a discouraging prognosis, and that there was little doubt that it represented the renal type of hypertension. He found a mortality of 1800 per cent in cases of chronic glomerulonephritis. He states that we are faced with a sex-difference which causes the circulatory system, both arteries and the heart, to be more strongly attacked in men than in women. He feels that age is of great importance, and he found little difference in prognostic value of systolic and diastolic readings. Myocardial disease gave a serious prognostic sign in hypertension and, contrary to other authors, he found that excessive obesity did not increase mortality but actually tended for better prognosis in his group. He found that 45 per cent died of cardiac disease, 16 per cent from cerebral hemorrhage, and 10 per cent from renal insufficiency; thus, 71 per cent died from causes which as a rule are regarded as being connected with hypertension.

Palmer, Loofbourow and Doering<sup>14</sup> (1948) published their 8-year follow-up study of 430 patients chosen from 1,072 patients. These patients were graded according to the Keith-Wagener classification. After 4 years the mortality was 6 per cent in Grade I, 17 per cent in Grade II, 36 per cent in Grade III, and 80 per cent in Grade IV. They found that patients in Grade IV were younger than patients in the other groups; that patients were older in Grades II and III than in Grade I; that hypertension is more common in women; that Grades I and II are more common in women; that an equal number of men and women were in Grade III; and that more men were in Grade IV. They estimated the 12-year survival rate as follows: Grade I, 58 per cent; Grade II, 24 per cent; Grade III, less than 2 per cent, and Grade IV, almost zero.

In the same year, 1948, Blood and Perera<sup>15</sup> published their 10-year follow-up of 50 patients. They presented a carefully selected group of patients who showed no significant symptoms when first seen, whose initial blood pressure was in excess of 140/90 mm Hg., and who had no evidence of cardiac, renal, or cerebral involvement. Their findings included 82 per cent female and 18 per cent male patients with an average age of 42 years. Among this group were 32 per cent deaths with the majority a result of cardiac complications or following cardiovascular accident. Average initial blood pressure was 182/108, and average last observation was 204/115. Cardiac insufficiency was found among 22 of the 50 patients at some time, usually late in the course of the disease; 39 per cent of these died. Cardiac pain was found in 18 per cent of the patients, with only one of these living when the paper was written. X-ray evidence of cardiac enlargement was present in 66 per cent of the patients, and 33 per cent of these died. Persistent albuminuria was present in 58 per cent, and 27 per cent of these died.

Perera<sup>16</sup> published another paper in 1948, in which hypertension was defined as an abnormal elevation of diastolic blood pressure. He estimated the incidence of essential hypertension as between 2 and 7 per cent, probably about 5 per cent of the adult population. Where there is a clear-cut family history of hypertension, it will be found to be as high as 50 to 60 per cent. Obesity, short and stocky body types, and hyperkinetic body reactions appeared to be present more frequently in association with hypertension. He found it somewhat more common in women, often during pregnancy, and in hyperactive, hostile, aggressive persons who showed emotional lability and anxiety patterns. In his study he found the onset usually in youth or early adulthood and believed that there was a gradual increase in blood pressure. He found headache in 78 per cent, mild retinopathy in 94 per cent, hemorrhages and exudate or papilledema in 19 per cent. Increased cardiac area by x-ray was found in 71 per cent, manifestations of congestive failure in 40 per cent, cardiac pain in 18 per cent, myocardial infarction in 9 per cent, and cerebral vascular accident in 12 per cent. Malignant hypertension occurred in about 5 per cent, most of these patients being men. Cause of death was congestive failure, 40 to 50 per cent; myocardial infarction, 10 to 20 per cent; cerebral vascular accident, 10 to 20 per cent, and insufficiency in not more than 5 per cent.

Burgess<sup>17</sup> paper in the same year stresses that hypertension, even of an excessive degree, that has been present 8 years or more and is not associated with well established cardiac or renal disease usually does not indicate a poor prognosis. These patients usually live to within 3 or 4 years of their normal

# Meat...

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It has recently been estimated that in the average adult 8 Gm. of globin is destroyed daily.<sup>1</sup> This means "that approximately 14% of the total dietary protein intake of the average adult [female] is required solely for the re-synthesis of new hemoglobin. These data reemphasize the importance of adequate protein, as well as iron, intake for the maintenance of a normal rate of hemoglobin synthesis in man."<sup>2</sup>

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1. Drabkin, D. L.: Metabolism of Hemin Chromoproteins, *Physiol. Rev.* 31:345 (1951).
  2. The Biosynthesis of Hemoglobin, Editorials, *J.A.M.A.* 150:1223 (Nov. 22) 1952.

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life expectancy. He found that the younger the patient at the time when hypertension develops, the less likely he is to live out his full life span. However, even in the young group, the average length of life is over 15 years. He found that such hypertension does not commonly develop into the malignant type, and is not associated with marked arteriolar changes evidenced by retinal hemorrhage and edema or with renal damage. The most frequent cause of death in these patients is cardiac failure, with cerebral vascular accident next. This study did not indicate that the prognosis for males was poorer than for females. It showed that the degree of hypertension is important in relation to the diastolic pressure only, and people with high systolic pressures and relatively low diastolic pressures (the arteriosclerotic type of hypertension) survive appreciably nearer to their normal life expectancy, on the average, than those with high diastolic pressures.

A group study of 241 patients by Ranges<sup>18</sup> (1949) was made of Metropolitan Life Insurance Company employees with hypertensive disease. They were checked periodically over 10 to 25 years and were, for the most part, symptom free and working. There were 130 women and 111 men, and the average age of onset of disease was 39.5 years. Of the entire group, 189 had no symptoms, while 38 displayed diminished cardiac reserve and 5 had headaches attributed to hypertension. EKG's of 148 were normal, while 108 showed left axis deviation; 1, right axis deviation; 9, myocardial infarction patterns; 7, left bundle branch block, and 3, right bundle branch block. Eyegrounds showed 8 normal, 97 Grade I changes, 6 Grade II changes, and 3 Grade III changes. On x-ray and fluoroscopy, 181 showed no enlargement of the heart, 23 had significant enlargement (15 per cent above normal), 24 showed widening of the aorta, and 13 were found to have enlargement of the heart and widening of the aorta. He felt there was no correlation between cardiac enlargement and duration of hypertension. This study is remarkable in that all 241 patients were living at the end of 10 to 25 years.

In 1950, Grant and Groen<sup>19</sup> published an excellent 9-year follow-up study of 418 patients. They found that 127 (31 per cent) of the patients were dead at the end of 9 years; that 25 per cent of the women died, while 40 per cent of the men died. However, these figures include cases of chronic nephritis as well as those of essential hypertension. These authors found that prognosis among their patients most closely paralleled the ophthalmoscopic findings (using the Keith-Wagener classification). Heart disease, albuminuria, and diabetes appeared to reduce the expectation of life, even more for women than for men. Hypertension accompanied by obesity appeared to be prognostically more favorable than the

same hypertension in patients whose weight was normal or low. Hypertension in young subjects carried a relatively shorter life expectancy than high blood pressure in old age.

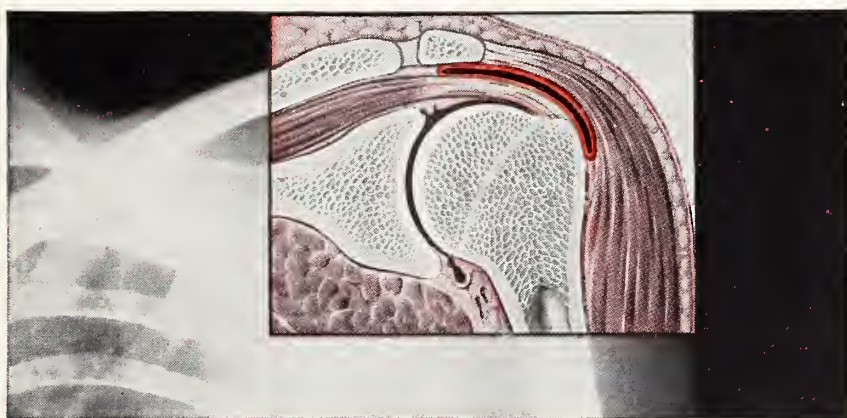
In 1951, Griep and associates<sup>20</sup> published their 8 to 10-year follow-up study of 117 patients. All had blood pressure exceeding 160/110 mm Hg. on two or more determinations and were under 53 years of age. These patients did not have primary renal disease or terminal complications. They found that 46 per cent died from hypertensive complications, 2 per cent from unknown causes, 6 per cent for reasons unrelated to high blood pressure, and 46 per cent were still alive at the end of 10 years. The hypertensive deaths were about equally divided between cardiac and cerebrovascular causes. Uremic deaths were uncommon. Factors influencing the prognosis in these patients were: sex, prognosis poorer in males; initial blood pressure levels, little or no significance; retinal vascular disease, probably a poor prognosis; renal status, when poor, then poor prognosis; effect of age and duration of hypertension, little or none; central nervous system symptoms such as headache and dizziness, did not alter mortality rate; effect of changes in blood pressure, when up, gives poor prognosis, while down is good sign, but usually stayed about the same. Whereas 46 per cent of the series died from hypertensive complications, the normal expected mortality would be 7.8 per cent.

O'Hare and Holden's<sup>21</sup> paper (1942) which followed 100 patients for 10 to 34 years (average 17 plus years), included only patients with "benign essential hypertension." Seventy-one per cent were living when the paper was published, and only 5 of these were in poor condition. Only such conservative methods of treatment as sedation, weight reduction, and general advice were employed. They felt that in making an accurate prognosis, the "basal" diastolic pressures and careful evaluation of the degree of retinal arteriolar sclerosis are of maximum importance. Cerebral vascular accident was the most common cause of death, occurring in 14 of the 29 patients who died, while coronary thrombosis caused death in 8 patients. Age of onset of hypertension ranged from 21 to 68 years, with the average being 45 years. There were 67 women and 33 men included in this group.

#### DISCUSSION

I have endeavored to present the significant findings from a number of the outstanding papers dealing with prognosis in essential hypertension. Many of the findings and opinions are contradictory, yet only by carrying out these long-term studies can a clear picture of this disease be obtained. When Janeway<sup>1</sup> published his paper in 1913, and found that the prognosis was much better than generally believed,

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he set the pattern which has been followed for the past 40 years. Groups of patients with hypertension have been studied from records of hospitals, of private physicians' offices, of clinics, and of insurance companies.

Unfortunately, so much time is consumed in such an investigation if patients are to be actually followed throughout the period of the report, that substitute methods have been used in many cases. One such method is to use hospital records, but here a group of patients is being studied who are often in the terminal stages of hypertensive disease and, therefore, give no true picture of prognosis. At the other extreme is the use of insurance statistics. These groups are selected because they would have been rejected for insurance or required to pay increased premiums or, even more likely, would never have applied for insurance if hypertension was known to be present. On middle ground then come the groups which are made up of ambulatory patients from physicians' offices or clinics.

There can be no doubt that the ideal method is for the same physician to make all examinations, using standardized techniques, over the entire period covered by the study. Probably the greatest single source of conflict between various reports has been the lack of uniformity in choosing patients. As mentioned above, different types of groups will give different results.

It has been found that malignant hypertension is more common in young patients (under 40 years), while a more benign type of disease is usually seen in the older age groups. The younger the patient at the time of onset of disease, the less likely he is to live out his normal life expectancy, yet it has been found that even the young patient has an average life expectancy of 15 years or so.<sup>13, 14, 17, 21</sup> The incidence of hypertension is said to increase with each decade of life up through the eighth, and at age 60 in men and at age 50 in women a majority are hypertensive.<sup>12</sup>

In most papers it has been reported that hypertension is found more frequently in women, often as high as a 2 to 1 ratio. It has also been found that the onset of clinical hypertension is earlier in women than in men.<sup>12</sup> However, the disease is much more benign in women. More men die of hypertension and its complications. Malignant hypertension appears more often in men, but also men do not withstand the stress and strain of benign essential hypertension as well as women. The reason for this is not understood, but the fact seems well substantiated by the literature.

Obesity and hypertension have been tied together in the minds of physicians and public for many years. Yet, it is interesting that few of the papers published have stressed this fact, and two of the

better papers have pointed out that, in the authors' findings, obesity gave a somewhat better prognosis.<sup>13, 19, 22</sup> Perhaps this can be explained by the fact that because of the excess tissue between the cuff and vessel when the blood pressure is taken, a higher than normal reading is obtained, and the better prognosis is actually a milder degree of hypertension than the blood pressure reading indicates. This same fact could then explain the fall in blood pressure often obtained with loss of weight, simply that a true blood pressure reading is obtained when the arm becomes more normal in size.

The level of the blood pressure at any one reading has very little significance in determining prognosis of any particular patient. An upward or downward trend to the blood pressure is of more importance but may give false hope or despair. Even in malignant hypertension, it is not the rapidly rising blood pressure alone which gives alarm but rather the appearance of other changes along with the rising

TABLE I.  
MORTALITY RATES REPORTED BY VARIOUS AUTHORS  
FOR HYPERTENSIVE PATIENTS CLASSIFIED ACCORD-  
ING TO THE OPHTHALMOSCOPIC PICTURE

Author	Mortality Rate, Percent			
	Grade I	Grade II	Grade III	Grade IV
Keith and associates <sup>18</sup>	30	46	80	99
Frant and Groen <sup>19</sup>	15	27	60	100
Palmer and associates <sup>14</sup>	10	25	48	90
Smithwick (Post-operative patients) <sup>23</sup>	12	22	40	47

blood pressure. There appears to be a gradual rise in blood pressure over the years in many groups of patients, but this doesn't seem marked or significant. The diastolic pressure is of more value in prognosis because it represents the minimal constant strain under which the heart is operating.<sup>27, 28</sup>

There can be little doubt that eyeground changes constitute one of the best ways of determining prognosis in any individual case of hypertension. Since Keith and Wagener<sup>10</sup> published their classification, the condition of the eyegrounds as determined by ophthalmoscopic examination has become one area of solid ground in the sea of uncertainty which surrounds the subject of hypertension. This is an examination within the scope of every physician who will acquaint himself with the normal fundus and learn to use an ophthalmoscope.

The onset of cardiac complications is generally felt to give a much poorer prognosis. Cardiac hypertrophy, as shown by x-ray and fluoroscopy, is thought to be related both to duration and degree of hypertension.<sup>11</sup> EKG changes which indicate left axis deviation, strain pattern, ischemia, bundle branch block, or infarction are of great importance in prognosis. Exertional dyspnea, pedal edema, and chest pain are the physical signs which go along

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with the x-ray and EKG findings. These are usually seen late in the course of the disease, but may show up at any time. They may be transient but more often are progressive and prognosticate the beginning of the end.

Cerebral symptoms of headache, dizziness, blurred vision, and nervousness are difficult to evaluate because the hypertensive patient with neurotic tendencies can run the gamut. Various authors don't agree on the importance of these findings. There can be no question but that the more severe symptoms are seen usually in the terminal stage of hypertension and, under such conditions, give a poor prognosis.<sup>29</sup>

Renal complications have a great part in the literature dealing with hypertension. From the time of Bright's work there has been much speculation about the renal origin of hypertension. Grollman<sup>24</sup> recently argued that all hypertension is of renal origin, being a lack of production of a hypotensive substance elaborated by the normal kidney. However, this paper is dealing with essential hypertension and assumes no primary renal disease exists in this type of hypertension. There will be changes in kidney function which are secondary to the hypertension, and a persistent albuminuria is not uncommon. These are usually not of primary importance, however, and are nearly always seen late in the course of the disease.

Heredity, familial tendencies, body build and hyper-reactivity have been discussed at some length in the literature, but these are more concerned with etiology than with prognosis once the disease is present, and therefore do not fall within the scope of this paper.<sup>22, 25, 33</sup>

Anxiety, hostility, and frustration are felt to influence this disease and, although these are difficult to evaluate, they must be considered. Several authors have indicated that the proper handling of this aspect of the patient's problem is of prime importance in achieving good results with patients suffering from essential hypertension.<sup>8, 9, 30, 31</sup>

Patients with essential hypertension die most commonly of cardiac disease and cerebral vascular accident, rarely of uremia. In the studies where renal disease was not excluded, a much higher incidence of uremia was found, and if this point is not remembered, a false picture is inferred. Diseases of cardiac origin, congestive failure and myocardial infarction, are probably the most common cause of death,<sup>1, 5, 13, 15, 17, 19, 20, 26, 32</sup> but some papers indicate cerebral vascular accident to be the more frequent cause of death.<sup>16, 21</sup> When these two causes are added together and the deaths recorded as related to hypertension, it is easy to see that an overwhelming majority of patients with essential hypertension die a hypertensive type of death.

A word of caution is justified in regard to deaths from cardiac diseases; it is not uncommon for many older persons without hypertension to die of cardiac disease. It has been suggested that hypertension merely accelerates the death from a cardiac disease which may not be a primary result of the hypertension. There are indications that this is the case because the mortality curve in hypertension, for patients above 60 years of age, is not so very much higher than the general mortality.<sup>13</sup>

#### CONCLUSION

When confronted with a patient who has an elevated blood pressure, the physician must make every effort to rule out renal disease, endocrine disease, or any other known cause for the hypertension. If the increased blood pressure is persistent and no cause is found, and the diagnosis of essential hypertension is decided upon, the physician must then evaluate the patient's prognosis on the following points. The sex, age, and family history of the patient will give the physician a place to start. A thorough history in order to determine the duration of the hypertension is important. A careful examination of the eyegrounds, cardiovascular system, kidneys, and cerebral circulation is necessary. When all of the examinations and tests are completed, it will, in most cases, be necessary to follow the patient for a period of months or years in order to determine the rapidity with which the disease is progressing.

By evaluating these various findings and keeping always in mind that essential hypertension is a disease which begins insidiously and is apparently slowly progressive over a long period of years, some concept of prognosis can be developed. Since the disease often, perhaps usually, extends over a period of 20 to 30 years, or longer, the physician must think carefully before deciding on any but the most conservative forms of therapy. It is difficult to evaluate this disease because of its long course, so it would be doubly difficult to evaluate the effectiveness of various forms of therapy unless many years were spent in the process.

Today we are confronted with many claims of better results from new surgical procedures, from more potent hypotensive drugs, and from intensive psychotherapy. One must temper these claims with the remembrance that they cannot be proved for years. For example, the surgeon who claims his operation is a great improvement for hypertension because all of his patients are alive and doing well after 5 or 10 years has probably not proved his point, because in essential hypertension it is not unusual for patients to be doing well after 5, 10, or even 20 years when only minimal therapy is employed.

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much better than is generally realized today, and therapy should be in accord with the expected longevity. There is still a great need for carefully prepared and controlled studies of patients with essential hypertension to give us a clearer picture of the disease.

## SUMMARY

It has been the purpose of this paper to examine the literature in an effort to determine what the life expectancy is in patients who exhibit a benign form of essential hypertension.

The problems encountered in studying this disease have been briefly discussed. Short summaries of the more important papers have been included, and conclusions are based upon the papers presented.

It was found that: (1) Prognosis is better in women, although the disease is more frequently found in females; (2) the disease is more severe in the younger age groups; (3) eyeground changes and basal diastolic pressure are two of the best guides to prognosis; (4) cardiac, cerebral, or renal involvement tend to give a poorer prognosis, (5) although the disease is more common among obese persons, in them it may be more benign; (6) benign essential hypertension extends over a 20- or 30-year period, and it is suggested that this be kept in mind when therapy is considered.

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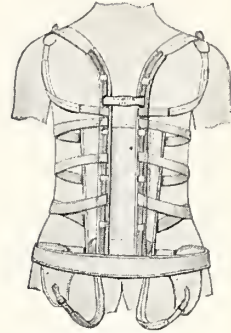
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Volume LIV

DECEMBER, 1953

No. 12

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### Facts Learned From a Maternal Mortality Survey With Emphasis on Obstetric Hemorrhage\*

Frank R. Lock, M.D.\*\*

Winston-Salem, North Carolina

Recently the public has shown an increasing interest in obstetrics. Maternal and infant death rates are often used in evaluating the quality of medical care in a given area, and actually they should furnish a fairly reliable index. The majority of physicians in practice have some direct or indirect responsibility for obstetric patients. There are exceptional areas where most of the obstetric practice is carried out by specialists. In North Carolina, however, at least 85 per cent of obstetric care is given by general practitioners, and in 1950, 36 per cent of our babies were delivered by midwives. I understand that there are fewer midwives practicing in Kansas, but I am sure that in your state, as in mine, the major portion of obstetric practice is the responsibility of the general practitioner.

Fortunately, no one of us has had an extensive personal experience with maternal deaths. The average physician may complete his entire medical career without losing an obstetric patient or with no more than one obstetric death every year or two. Consequently, it is only by pooling the experience of a great many physicians practicing obstetrics that we can learn what are the most common causes of such deaths, and how they can be prevented.

In 1946, the Medical Society of the State of North Carolina undertook a survey of maternal deaths in the state. Although our maternal mortality rate was not high, we recognized that every obstetric death represented a major tragedy to some family. The

society felt that a committee appointed to study every maternal death which occurred might disclose preventable factors which would permit initiation of corrective practices. The committee obtains its information by correspondence with physicians who sign death certificates for obstetric patients and with others who have any knowledge of the case. Information is given to the committee on a voluntary basis. This program has been highly successful and has received the wholehearted support of every physician in the state. It has stimulated interest in obstetrics, and as a result of the discretion exercised by the Maternal Welfare Committee there has been little embarrassment to anyone concerned.

A maternal death is defined by all recording agencies as any death occurring during pregnancy or within six months after pregnancy. Maternal deaths are readily divided into obstetric deaths—those due to obvious complications of the pregnancy or delivery—and non-obstetric deaths, which are the result of conditions not particularly affected by pregnancy or related to it. It must be recognized, however, that pregnancy may be a major factor in the course of unrelated illness, since its presence is bound to influence the decisions made by the physician in charge of the patient.

Records on the first 1,000 maternal deaths reviewed by the North Carolina Maternal Welfare Committee have information which shows conclusively that the vast majority of such deaths are preventable. In spite of the rural character of our state, lack of facilities for obstetric care was a minor factor. Ignorance or neglect upon the part of the patient

\* Presented at the 94th annual session of the Kansas Medical Society, Wichita, Kansas, May 3-7, 1953.

\*\* From the Department of Obstetrics and Gynecology, Bowman Gray School of Medicine of Wake Forest College.



or her family was blamed for 30 per cent of the first 1,000 deaths. More than 50 per cent of the deaths could be attributed to the physician, since it was apparent from the complete record of the case that the fatal outcome could have been avoided with ideal obstetric management. It was found that the physician's error might be one of diagnosis, management, judgment, or technique. The committee recognized, of course, the great advantage which it had in making a cool analytical review of a case history over the individual physician who had to face an acute obstetric emergency alone or with little help available.

TABLE 1

FACTORS CONTRIBUTING TO MATERNAL DEATHS—  
1000 CASES

Toxemia .....	264
Hemorrhage .....	259
Embolism .....	74
Infection .....	73
Cardiac Complications .....	46
Anesthesia .....	25
Others .....	103
Total obstetric deaths .....	844
Total non-obst. deaths .....	112
Insufficient information for analysis .....	44
	1000

Although prenatal care does not have a direct bearing on some obstetric problems, the fact remains that most of the obstetric patients who died from any cause had received inadequate prenatal care. A large proportion of these patients could be classified as indigent. The frequent relation of obstetric complications to low intelligence, lack of education, poor dietary habits, anemia, and low physical resistance cannot be overemphasized.

These problems are prevalent in the South, and probably contribute more to the relatively high maternal death rates of the southern states than does the large Negro population, though this latter factor is frequently blamed. The maternal death rate for Negro women in North Carolina, where 30 per cent are delivered by midwives in the home, was lower than that in a large western city where 90 per cent of the Negro women were delivered by physicians in the hospital. We believe that the dietary habits of the southerners in rural areas may be of greater signifi-

TABLE 2

RELATION OF ECONOMIC STATUS AND PRENATAL  
CARE TO MATERNAL DEATHS

Primary Cause of Death	Number	Inadequate Prenatal Care	Indigent
Toxemia .....	264	230	150
Hemorrhage .....	259	209	167
Embolism .....	74	47	40
Infection .....	73	63	26
Cardiac complications .....	46	35	29
Anesthesia .....	25	14	11
Other obstetric causes .....	103	79	48
Non-obstetric causes .....	112	73	61
Insufficient information ....	44	—	—

cance than the large number of the nonwhites in the population.

The two principal causes of maternal death in North Carolina, and in every section of the country, are toxemia of pregnancy and hemorrhage. These two causes alone are responsible for 52 per cent of all maternal deaths. In recent years, prenatal care has reduced the actual number of deaths resulting from hypertensive complications of pregnancy, but toxemia still consistently leads the list as a major cause of maternal deaths in our state. Obstetric hemorrhage, the leading cause of maternal deaths in many areas of the country, has increased in relative importance in our state also.

#### ERRORS FOUND IN THE MANAGEMENT OF OBSTETRIC PROBLEMS

Although statistical analysis of the records of the North Carolina Maternal Welfare Committee is extremely interesting, their value is far greater when the case histories are reviewed individually, and it is learned that errors in management of the major problems encountered follow a consistent pattern, regardless of the age, training, or experience of the physicians in charge. Since each individual physician has only limited experience with the major complications of obstetrics, the opportunity of profiting from the experience of others is invaluable. I am quite sure that the service rendered obstetric patients in the North Carolina Baptist Hospital has been greatly improved as a result of the lessons which the entire staff has learned from the cases in the files of the Maternal Welfare Committee. When a major obstetric complication develops, some feature of the case usually reminds us of similar cases in the committee's files and of the errors which may have contributed to a bad result.

*Toxemia:* Since toxemia of pregnancy is the subject of another talk before this group, I will not discuss it further now.

TABLE 3

CONDITIONS RESULTING IN DEATH FROM OBSTETRIC  
HEMORRHAGE

Abortion .....	16
Ectopic pregnancy .....	33
Premature separation .....	53
Placenta previa .....	25
Postpartum atony .....	90
Rupture of uterus .....	27
Inversion .....	1
Cervical laceration .....	6
Miscellaneous .....	8

*Hemorrhage:* Deaths resulting from obstetric hemorrhage have been associated with various complications of pregnancy. Such deaths are less frequent in the first trimester of pregnancy than in the third trimester of pregnancy, when they result from complications of labor and delivery. Practically all of the abortions which resulted in fatal hemorrhage

were criminally induced. The patients' desire to conceal their condition prevented them from seeking medical assistance until it was too late. We are fortunate that the problem of induced abortion is not greater.

Deaths related to bleeding from ruptured ectopic pregnancy can invariably be attributed to error in diagnosis and delay in treatment. Each author who considers this subject emphasizes that the physician must be "ectopic conscious" to obtain good results. The diagnosis is usually obvious to a physician who seriously considers the possibility of ectopic pregnancy in each patient who has bleeding, pain, or anemia in the first trimester. Immediate operation is imperative when the diagnosis has been made. Delay in initiating definitive surgical treatment is a major cause of death in these cases. Operation cannot be deferred for the convenience of the hospital staff or surgeon.

Blood for transfusion should always be available when a ruptured ectopic pregnancy is suspected.

*Hemorrhage due to placenta previa and premature separation of the placenta.* It is almost inconceivable that all but one or two of the deaths occurring from obstetric hemorrhage in the latter part of pregnancy were postpartum deaths. Not one patient with placenta previa died before intervention and delivery. Only a few patients with premature separation of the placenta died as a result of antepartum blood loss. Postpartum bleeding following intervention was the primary cause of death in these cases as well.

Because of the poor results obtained with internal podalic version and extraction in the management of obstetric hemorrhage, this method has been abandoned by all of the major teaching centers. Eleven of the 27 cases of rupture of the uterus in which death resulted from bleeding were caused by internal podalic version and extraction. Our files contain the records of several other similarly injured patients who subsequently died of peritonitis, renal shutdown, and other effects of the uterine rupture.

These findings of the maternal mortality survey have confirmed our opinion that active treatment of placenta previa and premature separation of the placenta should never be attempted until all preparations for satisfactory management of the problem have been made. Certainly there should be no delay in obtaining blood for transfusion and in undertaking other supportive measures, such as the administration of sedatives, fluids, and oxygen. However, the use of vaginal packs or any traumatic procedure in an effort to control bleeding is contraindicated.

Of first importance in the treatment of placenta previa and premature separation of the placenta is the administration of blood to the patient in an amount larger than that which has apparently been lost, and sufficient to correct anemia as well as any

evidence of shock. A sterile pelvic examination should then be undertaken, but only in a hospital operating room with all preparations made to handle the problem by any method which the findings indicate. Authorities agree that the simplest possible method of management should be selected. Simple rupture of the membranes is the treatment of choice in the majority of cases. We believe, however, that the use of cesarean section for the delivery of patients with complete placenta previa, and for some others with an undilated and uneffaced cervix, is far safer than heroic attempts to accomplish a prompt vaginal delivery. Although this policy may lead to an excessive number of cesarean sections, the advantages outweigh the disadvantages when these patients must be treated in hospitals with limited help, when provisions for blood transfusion are inadequate, and when no physician with a wide obstetric experience is available.

*Postpartum hemorrhage:* No problem in obstetrics better demonstrates the value of adequate prenatal care than does the problem of postpartum hemorrhage. Numerous studies have demonstrated the importance of adequate nutrition. In the prevention of hemorrhage, there is some question as to whether or not anemia predisposes to postpartum hemorrhage. The patient whose blood is adequate in volume and of good quality is much better able to withstand the loss of blood than is the patient with anemia. In anemic and undernourished patients, the loss of small quantities of blood may result in shock, circulatory collapse, and death.

Several factors which predispose to postpartum hemorrhage or indicate an increased risk of hemorrhage should be kept constantly in mind. Excessive postpartum bleeding is to be expected in all cases of premature separation of the placenta and placenta previa. Overdistention of the uterus by polyhydramnios or a multiple pregnancy, pregnancy occurring in older women, and increased parity are all indications for extra caution. When bleeding has occurred in the first and second stages of labor, we should certainly anticipate the probability that it will be abnormal in the third stage of labor. Any patient who has prolonged labor, uterine inertia, operative delivery, or general anesthesia is a potential candidate for postpartum hemorrhage.

The records of the Maternal Welfare Committee reveal one consistent pattern which is largely responsible for all of the maternal deaths resulting from hemorrhage. Because of failure to anticipate the possibility of hemorrhage as a postpartum complication in the conditions which have been listed, and failure to appreciate the great danger of even moderate bleeding in patients with anemia, proper preparation is not made to meet this emergency when it occurs. Whenever possible, blood should be administered before delivery to any patient who enters



labor with a hemoglobin level of 10 Gm. or less, and certainly blood should be obtained and available for administration to all such patients and to any who are potential candidates for postpartum bleeding.

Following delivery of the baby, no patient should be left even momentarily unattended. Some physicians make a practice of attending the baby and even tying the cord before the third stage of labor is completed, a practice which has resulted in the unobserved loss of large quantities of blood in some instances.

It is apparent that a great many physicians do not have in mind an integrated plan of management in the event of a postpartum hemorrhage. Indecision may lead to the loss of a large amount of blood.

We are all aware that bleeding cannot be controlled during the third stage of labor until the placenta has been completely delivered. In the event of active bleeding, the placenta should be removed immediately, even though manual removal is necessary. Repeated attempts to express the placenta in the presence of even moderately severe bleeding may have serious consequences.

Cosgrove and many others recommend compression of the uterus between the hands, with one hand grasping the cervix and the other on the abdomen. This is an extremely valuable maneuver. The cavity can first be explored for evidence of retained placental tissue or of uterine laceration, and this method of compression will usually control the bleeding. In our experience repeated administration of oxytocics and the intravenous administration of a dilute solution of pitocin have been valuable in the patient who tends to have repeated relaxation of the uterus, with recurrences of postpartum bleeding. The fundamental

basis of treatment, however, must always be *the administration of blood by transfusion*. Preparations for transfusion should be made prior to the occurrence of hemorrhage when possible, but delay in preparing for transfusion and in administering blood to any patient who bleeds excessively is unforgivable.

*Anesthesia:* The advent of anesthesia has greatly improved the morale of the childbearing woman. It is frightening, however, that since 1946, 25 deaths have occurred in North Carolina from commonly used anesthetics. In each instance, some error in technique was apparent after a review of the record.

In each fatality resulting from spinal anesthesia, sudden death followed the administration of ordinary surgical doses of a spinal anesthetic. Special techniques for the use of spinal anesthesia in obstetrics have been developed, and there is little question that this method is comparatively safe when one-third to one-half of the usual anesthetic dosage is used, and special obstetric techniques are employed.

All but one of the deaths related to ether anesthesia resulted from the aspiration of stomach contents when vomiting occurred during the anesthetic.

#### CONCLUSION

A maternal mortality survey stimulates the interest of physicians in obstetrics. The information gained by such a study provides concrete evidence of the problems which exist in the area of study; further, dissemination of this information promotes alertness to major obstetrical hazards and the prompt initiation of preventive measures designed to reduce maternal and infant loss.

Man has existed for about a million years. He has possessed writing for about six thousand years, agriculture somewhat longer. Science, as a dominant factor in determining the beliefs of educated men, has existed for about three hundred years; as a source of economic techniques, for about one hundred and fifty years. When we consider how recently it has risen to power, we find ourselves forced to believe that we are at the very beginning of its work in transforming human life.—*Bertrand Russell*.

# Diverticulitis and Its Confusion With Carcinoma In the Sigmoid Colon\*

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As surgeons, our interest in diverticulitis is not in the primary disease; its treatment lies in the realm of the internist. Our interest is in the complications of diverticulitis. These are perforation, bowel obstruction, fistula, and abscess formation. These complications present a problem in diagnosis many times because of their mimicry of carcinoma of the colon. Ofttimes the roentgenologist is confused by barium enema studies, and what he concludes is a carcinoma of the large bowel, when brought to light by the surgeon's knife, turns out to be diverticulitis or one of its complications.

Pathology and clinical manifestations of diverticulitis have largely been acquired over the period of the past 50 years. Mayo, Beers, Moynihan, Wilson, and Giffin have added greatly to our knowledge of this disease and its complications. The advent of roentgen examination of the colon with barium, about 1914, also aided in the diagnosis of this disease.

With the development of the chemotherapeutic and antibiotic agents over the past two decades, colon surgery has been placed on a safe and sound basis. Thus, colon disease and its complications have come under closer scrutiny by the surgeon. More extensive and safer colon surgery has been done, and, in this way, many of the complications of diverticulitis have become amenable to surgery. Most individuals with diverticulitis will and do respond satisfactorily to medical management. However, it has been estimated that of those having diverticulitis, approximately 25 per cent will eventually require surgery.

## ETIOLOGY

The exact causative factors in the development of diverticula are not known. All theories of explanation are inadequate. Probably a combination of factors exists that lends itself to the development of the diverticulum. For the most part, the diverticulum is assumed to be acquired, although there may be a congenital weakness in the bowel wall that plays a part. Such conditions as muscular weakness, neuromuscular dysfunction, vascular stasis, increased intracolonic pressure, and degenerative changes of senility all may play a part in the development of diverticula. All parts of the colon can be involved, but the greatest

incidence is in the sigmoid region. It is also in this area that the greatest incidence of diverticulitis is found. It is generally felt that diverticulitis results from the improper emptying of the diverticulum. Smithwick explained the increased incidence of diverticulitis of the sigmoid on the basis of the narrow lumen, stasis, and solid fecal material. To this Mayo and Blunt<sup>9</sup> added the factors of the propulsive mechanism of the bowel and the tendency to spasm in the sigmoid area.

## INCIDENCE

Diverticula of the colon are found most often after 40 years of age. It rarely is found in the 20- and 30-year groups. It has been estimated that approximately 5 per cent of patients having bowel symptoms will have diverticulosis. Eighty per cent of diverticula are found in the sigmoid colon. Rarely are they found in the rectum. From the sigmoid to the cecum there is rapid decrease in incidence. Mayo and Blunt,<sup>9</sup> in a study of 202 cases of complicated diverticulitis, found the sigmoid involved in 198 cases, the cecum in 2, and the transverse and descending colon in 1 each. While diverticulosis is divided almost equally between both sexes, the incidence of diverticulitis is found in the male almost twice as frequently as in the female.

## PATHOLOGY

Diverticula, being outpocketings of the bowel lumen with an open communication with the bowel lumen, are capable of filling with fecal material as well as emptying. When a firmly packed or hard particle of fecal matter becomes lodged in one of these pockets, edema of the mucosa results with obstruction to emptying. Inflammation takes place, and the process of diverticulitis begins. A number of possibilities may result at this point. The inflammation may subside, and the process becomes quiescent. If this does not take place, the inflamed sac may rupture and produce peritonitis. Again, diverticulum may not rupture, but the inflammation may spread to the adjacent bowel wall and produce what is called peridiverticulitis. This results in narrowing of the bowel lumen and may result in bowel obstruction. Localized abscesses may form at the site of perforation of a diverticulum. Various types of fistulae may develop between the inflamed region of the bowel and sur-

\* Presented at the fourth annual meeting of the Kansas Chapter, American College of Surgeons, Wichita, September 13, 1953.



rounding structures. Fistulae to the surrounding bowel, to the urinary bladder, to the vagina, or to the abdominal wall may develop.

#### SYMPTOMS

The most common symptom of diverticulitis is pain and soreness in the left lower quadrant. Ofttimes it is a pain that has been intermittent and may extend over a period of several years with acute exacerbations. Associated with this is usually some muscle splinting and rebound tenderness. There may be nausea and vomiting. Thus the name "left sided appendicitis" has arisen. If the inflammatory process spreads to the bowel and produces obstruction, there is associated cramping pain, constipation, and abdominal distention. If perforation results, there is usually abscess formation. Both obstruction and abscess formation produce palpable masses in the left lower quadrant. Rectal bleeding may occur with diverticulitis. However, much less frequently does bleeding appear with diverticulitis than with carcinoma of the bowel.

It is with these two symptoms, namely abdominal mass and rectal bleeding, that the confusion in diagnosis between diverticulitis and carcinoma arises. It has been fairly well established that there is no etiological relationship between carcinoma and diverticulitis although the two conditions can and do exist side by side.

Fistula formation occurs more frequently than one would suppose. Mayo and Blunt<sup>9</sup> reported an incidence of 22.8 per cent of enterovesical fistulae in a study of 202 cases of complicated diverticulitis of the sigmoid. They also showed that in this complication males predominated 5 to 1 over females. This was explained by the fact that the female bladder is protected by the uterus.

#### DIAGNOSIS

The greatest aid in the diagnosis of diverticulitis and diverticulosis is the roentgenologic examination. Even this aid is limited where there is obstruction so that the barium will not pass beyond the site of obstruction. Here one meets the difficult problem of differentiating between carcinoma and obstructing diverticulitis. History and duration of symptoms may help, as well as the character of the defect found on barium study. The possibility of coexistence of the two conditions also must be considered. Pemberton<sup>5</sup> stated that in approximately 25 per cent of cases of obstructing diverticulitis, carcinoma could not be ruled out with certainty. This was in 289 patients with diverticulitis. Sigmoidoscopic examination is of limited value as an aid in diagnosis but should always be done. If the lesion lies in the 8- to 10-inch reach of the sigmoidoscope, diagnosis can be established. Above this region, one again is uncertain.

The repeated passage of bright red blood is more suggestive of carcinoma than diverticulitis, although, as mentioned before, diverticulitis can produce bright red blood in the stools. Incidence of blood in the stool in diverticulitis ranges from 5 to 17 per cent in different series.

#### DIVERTICULITIS VERSUS CARCINOMA

The differentiation between diverticulitis and carcinoma is one of the main points of interest of this paper. Three cases will be cited from private practice to point out various errors in diagnosis.

Obstructive diverticulitis and carcinoma have many symptoms in common. Both produce bleeding, low abdominal cramping, diarrhea or constipation, and a feeling of incomplete emptying of the bowel with defecation. Both processes occur in the same age groups and have a predilection for the left side of the colon. The demonstration of diverticula or a long filling defect by roentgen ray is suggestive of diverticulitis, but again the possibility of coexisting carcinoma clouds the diagnosis. Occasionally, as will be cited in one of the cases to follow, even with the lesion under direct vision at the operating table one is not always able to make the correct diagnosis. It is not to be inferred that the association of these two lesions is a common occurrence.

Rankin and Brown<sup>10</sup> reported that in 227 cases of diverticulitis, carcinoma was encountered in only four cases. Conversely, diverticulitis was present in only 4 of 679 cases of carcinoma. The above figures certainly bear out the point made previously, that diverticulitis does not predispose to carcinoma, nor is there any relationship between the two conditions. Although the occurrence of both conditions together is rare, the differentiation between the two in a given case is often difficult. As Pemberton<sup>5</sup> reported, carcinoma could not be excluded by clinical methods of examination in 25 per cent of the cases. He also reported that several cases were considered inoperable carcinoma and were later proved stenosing diverticulitis. However, more frequently radical resection is done for malignant disease which later is shown to be diverticulitis.

In surgical treatment, oftentimes a radical one-stage procedure is done for what is thought to be carcinoma, which in reality is some type of inflammatory diverticulitis which would have responded better to a two- or three-stage procedure. Conversely, probably there are many reports of long time cure of carcinoma of the lower colon, after simple colostomy, which in reality are cases of diverticulitis.

In favor of the diagnosis of carcinoma is a history of fairly good health with no previous colon difficulty, loss of weight, and blood in the stools. Colon distention is usually found more often with carcinoma than with diverticulitis. In cases treated medically, where

there is any question of malignancy, laparotomy is definitely indicated, and, if at operation there is still doubt as to malignancy, resection of the involved segment is clearly indicated.

#### TREATMENT

Treatment of diverticulitis and its complications as well as treatment of carcinoma is covered thoroughly in other papers and will not be stressed here. Suffice it to say acute diverticulitis is a medical problem and should be treated as such. The complications of diverticulitis are surgical problems and respond readily to properly chosen surgical procedures. Abscess formation with diverticulitis calls for drainage of the abscess and nothing else, delaying further bowel resection for a later date when the infection and peritonitis are under control.

Fistulous formation associated with diverticulitis should first be treated with proximal colostomy and diversion of the fecal stream. A good percentage of fistulae will heal spontaneously on this régime. If, after 6 to 9 months, the fistulous tract is not healed, resection of the tract is indicated.

Bowel obstruction associated with diverticulitis is a surgical problem that is in the process of change. With the aid of our chemotherapeutic and antibiotic drugs, surgeons can be more bold, and what used to be a 2- or 3-stage procedure can in some cases be a 1-stage end to end anastomosis. Proximal colostomy is still the procedure of choice for acute perforation with peritonitis or abscess. The old-time tested exteriorization with establishment of double barreled colostomy and later crushing down of the spur should not be discarded. However, in many cases of stenosing diverticulitis where peritonitis is under control, either end to end open anastomosis in a 1-stage procedure or a closed type of anastomosis can be done. Again it should be stressed that where the possibility of carcinoma enters the picture, it is better to err to the more radical side and do a resection of the lesion in one stage rather than to do a preliminary colostomy with waiting interval of 6 to 12 months before further surgery is attempted.

Case 1, D. A. H., a 63-year-old white male, was first seen by an internist with a three-day history of generalized lower abdominal pain. During the preceding eight hours, the pain had been more intense. There was no previous history of pain, nausea, or vomiting, and no testicular radiation of pain. He had been having daily stools, and during the last week stools were loose. He had a past history of myocardial infarction, and recently had had anginal pain on exertion. He had had surgery for hemorrhoids and a nasal operation in past years.

The abdomen was rounded and obese. No muscle spasm was elicited. No masses were palpable. There was tenderness to palpation in both lower quadrants,

more so on the right with rebound tenderness in the right lower quadrant and referred tenderness from the left lower quadrant to the right lower quadrant.

Laboratory examination revealed a leucocyte count of 15,000 with a shift to the left. Urine was negative.

A diagnosis of appendicitis was made. The patient was taken to the operating room where, under general anesthesia, a normal appearing appendix was found and removed. Abdominal inspection revealed a hard, irregular, indurated mass in the sigmoid region which was palpated by both surgeons present and thought to be carcinoma. The patient was returned to his room. After an uneventful convalescence, his bowel was prepared with antibiotics and enemas, and he was returned to surgery where an anterior resection of the mass with end to end anastomosis was performed. The patient's convalescence was complicated by 12 days of hiccoughs, but otherwise he had a normal recovery from the bowel surgery.

COMMENT: This is an example of a lesion under direct vision on two different occasions, and not until the lesion was opened following surgery was a diagnosis of perforated diverticulitis entertained. Pathology report was "hypertrophy of intestinal wall with acute and chronic inflammation of the pericolic fat; diffuse panniculitis."

Case 2, H. A. S., a 56-year-old white male farmer, was completely well until two years prior to being seen. At that time he had an attack of left lower quadrant pain which lasted about a week. He did not stop work and soon "wore it out." He was constipated at the time but did not recall diarrhea or blood in the stools. About 10 days prior to first being seen, he had another attack of left lower quadrant pain which persisted. He was constipated and bloated. He had no nausea or vomiting, no diarrhea or blood in stools. Pain was a constant discomfort with cramp-like exacerbations. His appetite had decreased. His weight had been on the increase for a year.

Physical examination was essentially normal except for the abdomen. This was moderately obese. There was tenderness in the left lower quadrant, and a definitely palpable mass presented itself. It was irregular in outline and filled the region of the sigmoid colon. The mass was movable and tender. The liver was palpable three fingers' breadth below the costal margin, but was smooth in outline and non tender. Sigmoidoscopic examination was negative to 10 inches. Complete blood count and urinalysis were normal. Barium enema examination revealed diverticula in the descending colon. A rather sharply demarcated narrowing in the upper sigmoid colon was found which was interpreted as probable carcinoma of the sigmoid, although the diverticula present left the possibility of diverticulitis to be considered. The patient's bowel was prepared and he was taken to



surgery. A three-inch mass was found in the sigmoid colon, and an anterior resection with end to end anastomosis was performed. The patient had a wound evisceration on his fifth postoperative day, but had no difficulty from the anastomosis.

COMMENT: This case exemplifies a palpable mass by abdominal examination, substantiated by x-ray examination, and again not correctly diagnosed until the segment of bowel was opened following surgery. Pathologic diagnosis was diverticulosis with diverticulitis of sigmoid colon.

Case 3, K. A. M., a 63-year-old white female housewife, when first seen complained of lower abdominal cramping of four weeks duration. This began with a bout of what she called "intestinal flu." Cramping was lower abdominal with more tenderness on the left. The patient was constipated and was having mucus in her stools, but no blood was seen. She had considerable gas and bloating associated with cramping. She had lost about four pounds of weight since the onset of her trouble.

Physical examination was essentially negative except for the abdominal examination. The abdomen was flat and soft. Definite tenderness was elicited in the left lower quadrant. No masses could be found abdominally. Sigmoidoscopic examination was negative to six inches, beyond which the scope could not be passed because of discomfort to the patient. Pelvic examination revealed a small uterus and negative adnexa. Rectovaginal examination revealed a hard, irregular mass just to the left of the cervix and not attached to pelvic structures.

Laboratory work revealed a normal complete blood count and urinalysis. Barium enema studies revealed diverticula of the sigmoid and descending colon but no evidence of intraluminary defect.

The patient went to surgery where a lower sigmoid mass was encountered, thought to be carcinoma on palpation. It was resected with end to end anastomosis. Palpable glands were encountered in the mesentery and were resected with the mass.

COMMENT: Here again a mass is palpable on

clinical examination but was not substantiated by roentgenologic examination. At surgery the mass was found and again not differentiated from carcinoma until opened grossly following surgery. Pathologic diagnosis was diverticulosis with diverticulitis and peridiverticulitis of sigmoid colon.

#### SUMMARY

1. Uncomplicated diverticulitis of the colon is medical and should be treated as such.

2. The complications of diverticulitis are in the realm of the surgeon, and procedures are indicated for these complications.

3. The relationship of diverticulitis to carcinoma is incidental, but the differentiation between these two is at times difficult and occasionally impossible to make. Three cases are cited to demonstrate this difficulty.

4. One stage end to end resection in the sigmoid colon has become increasingly safe and is the procedure of choice where the inflammation of diverticulitis can be made to subside without recourse to fecal stream diversion.

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There is a wonderful mythical law of nature that the three things we crave most in life—happiness, freedom and peace of mind—are always attained by giving them to someone else.—*Peyton Conway March.*

# Dracunculosis\*

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This case is reported because we have not been able to find a similar one in American medical literature. Cecil's *Textbook of Medicine*, First Edition, page 446 says, "A few cases have been reported in the United States." In the second edition, page 472, he states, "A few introduced cases have been reported in the United States." In his sixth edition, on page 423, he says, "In the United States and Canada fur-bearing mammals may be infected, but no native cases have been reported." Research by W. F. Prior Company, Inc., Hagerstown, Maryland, failed to uncover any native cases in the United States.

*Dracunculus medinensis*, or Guinea worm, is quite common in India and Asia. The development of the worm requires approximately one year. Prior to the expulsion of the larvae by the worm, an ulcer appears on the skin surface of the human host. When water comes into contact with this ulcer, a fluid escapes which, microscopically, has been shown to contain a great number of small embryos. The young worms, being discharged into the water, move about actively for several days. They develop further when ingested by a fresh-water *Cyclops coronatus*. After migrating to the body cavity of the cyclops, the young worms undergo further development and molt twice. The larvae develop no further until taken into the human stomach.

After ingestion into the human intestinal tract, "... experimental evidence in animals suggests that the ingested larvae perforate the gut and develop in the retroperitoneal tissues. When the larvae have grown to adult size, copulation occurs and the impregnated female worm makes her way along the fascial planes to that part of the body where her instincts tell her water may be found in contact with the skin."<sup>1</sup> The male worm, which is 4 cm. or less in length, dies after fertilizing the female. She in turn grows from 20 to 30 cm. in length.

## CASE REPORT

Mrs. H., at the age of 17 years (1946), lived for one year in a Kansas town where the water was not potable. All drinking water was brought in by railroad tank car. She had never been out of the state and had no personal contact with anyone who had even been in an area infected with *Dracunculus*.

On June 6, 1947, she entered a well known clinic in Kansas. An abstract of her admission and discharge from there follows:

Chief Complaints: 1. Stomach discomfort after meals associated with nausea for six months; 2. Heavy menstrual flow for four months; 3. Urgency, frequency, and burning on urination for two weeks.

Her past history was uneventful except for mild hay fever in the spring.

The physical examination was essentially normal for the head, neck, and chest. The abdomen was rounded and showed a smooth mass below the umbilicus. The abdomen was somewhat spastic. The examination was not too satisfactory because of the inability of the patient to relax.

On June 11, 1947, an intravenous pyelogram showed a normal shadow of the right kidney, pelvis, and ureter. There was no visualization whatsoever of the left kidney. On retrograde examination, an obstruction was met at 6 cms., and efforts to visualize the left kidney were not successful.

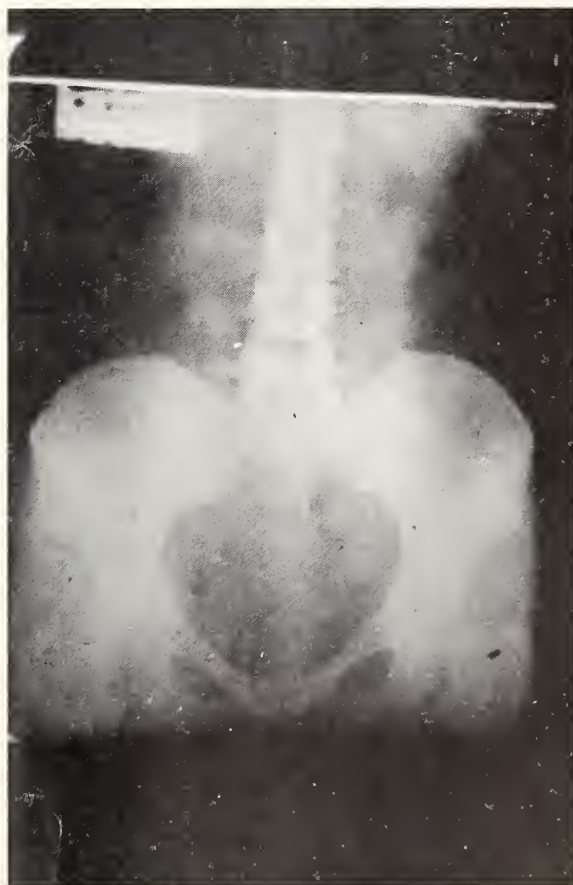


Figure 1. Preoperative x-ray shows stone.

\* Presented at the fourth annual meeting of the Kansas Chapter, American College of Surgeons, Wichita, September 13, 1953.



On June 24, 1947, drainage of an infected left kidney was done, the postoperative diagnosis being pyonephrosis. Her postoperative course was uneventful, and she was discharged on July 5, 1947.

On August 12, 1947, she returned, complaining of pain in the left kidney area. A left nephrectomy was performed. She was discharged August 28, 1947.

She returned to the clinic again on June 20, 1949. Her general health had improved, but she had a small draining sinus in her operative scar. This had never healed. The sinus was excised, and she was discharged June 28, 1949. She was again in the hospital from September 20 to 28, 1949, because the sinus had failed to heal.

Mrs. H. was first seen by A.H.B. in June 1949, complaining of a draining sinus following removal of her left kidney in 1947. Local treatment was not effective. In October 1950 more definitive steps were taken.

An x-ray of the abdomen showed a .5 cm. area of calcific density at the level of the second left lumbar vertebra. Dye injection into the sinus tract went in the direction of this density, but did not communicate with it.

On October 20, 1950, the sinus tract was explored

under general anesthesia. The dense scarred tract was excised, removing a piece of tissue  $1\frac{1}{2}$  by 4 inches in size. The tract ended rather abruptly although there was still some scar tissue in the retroperitoneal area. The removed tissue was placed in a specimen basin. The entire renal area was explored for a residual stone, but none was found. After a few moments a white worm was seen to crawl out of the sinus tract. It measured .2 x 4 cms. in length. This worm was identified by Lattimore-Fink Laboratories, Topeka, as a *Dracunculus medinensis*.

The incision was closed anatomically with No. 0 chromic catgut. A small Penrose drain was inserted.

Her postoperative course was uneventful except for a low grade temperature elevation and moderate serous drainage until November 7, 1950. The operative area has remained healed since that time. There have been no manifestations of residual Guinea worms.

She was last seen July 29, 1953. Her general condition was good. X-ray of the abdomen showed the calcific density remaining at the level of the second lumbar vertebra.

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1. Elliott, Mountjoy: Trans. Royal Soc. Trop. Med. and Hygiene 35:291-301 (May) 1942.



Figure 2. Dye does not reach stone.

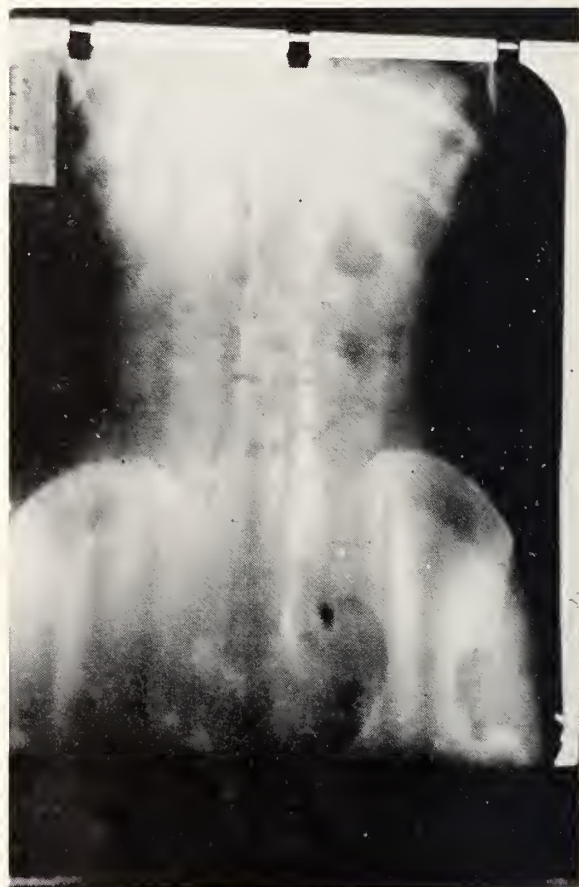


Figure 3. Postoperative x-ray shows stone remaining.

## BLUE SHIELD

### THE DOCTOR'S ROLE IN MEMBER EDUCATION

A recent Blue Shield case which has elicited a considerable amount of discussion seems interesting enough to bring to the attention of the medical profession in Kansas. An infected fingernail was treated with incision and drainage by the family physician, and a charge of \$7.00 was made. Of this amount, Blue Shield was responsible for payment of \$5.00 on the basis of the usual allowance for treatment of minor emergencies where no fracture occurs and no surgery is required.

Through misunderstanding, the member had thought that her entire bill would be paid. She insisted that this was her right and felt she was being discriminated against. An attempt was made by a staff member to explain to her that this would be true if she were in the low income group with an annual income of \$2400 if single or \$3000 if married. The difference charged by her physician was only \$2.00, and he was entirely within his rights in doing this, but she would not be convinced. It was "not the money but the principle" she insisted, which was going to cause her to drop her membership in Blue Shield. Many other people in her group, she stated, would follow in her lead, once they heard of this action by the Blue Shield!

It would seem this is a definite threat to the maintenance of good public relations, and all because of a misunderstanding on the part of a member. Someone has failed to educate this member as to the kind of protection Blue Shield can give and that carrying a membership in Blue Shield is not entirely swapping dollars for the same amount of return in service. In her conversation she stated that several commercial plans would do better than this. There is some truth in this statement, but it is also true that her Blue Cross-Blue Shield membership would have been of much more value to her if she had been hospitalized for a long time or had required extensive surgery. If this fact could be brought home to the members, they would probably not be so concerned about treatment for minor conditions.

The question as to how much of the cost of medical and surgical care should be covered by Blue Shield arises so often that it seems appropriate to discuss the original principles of the program at the risk of boring those who have been well acquainted with them for so long. When the House of Delegates of the Kansas Medical Society agreed on the desirability of joining the national trend toward pre-paid medical and surgical care in an effort to elim-

inate the possibility of socialized medicine, a program which would offer coverage mostly for catastrophic illness was chosen. This has been followed, in most respects, with an occasional change to allow payment for some procedure which seems to be important to the member public.

Inclusion of all services could be accomplished in several ways. Larger dues collected from all members would take care of the increased payment. Reducing hospital benefits might be an answer to part of the problem. Another possibility would be to restrict benefits to those members who might be considered "chronically ill." A limit of one hospitalization per year for one ailment to 1100 members who fall within this category would save the plan half a million dollars a year! If Blue Shield chose to exercise its right to cancel memberships for health reasons, a large saving would be accomplished.

The philosophy back of the origin of Blue Cross and Blue Shield would not permit this practice. This would be a penalty against the many to protect the few against payment of small doctor bills which could easily be included in the family budget. One of the basic principles of the Blue Cross-Blue Shield program is that many people pay for the medical care of the few.

Possibly a word of explanation from the doctor to the patient mentioned in this story would have obviated all the controversy. Her doctor or his medical assistant would have been able to point out to her the fact that partial coverage for the treatment she received was sufficient protection for a minor condition, thus making it possible for Blue Shield to maintain a sufficient reserve to protect against a catastrophic illness.

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The World Medical Association, representing doctors from 46 nations, has taken the initiative in opposing medical care under government controlled social security schemes. The association contended that physicians should not be forced to work on a full time salaried medical service under a government plan because it would leave the doctor no incentive.

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Enrollments in the country's 72 medical and 7 basic science schools during 1952-1953 totaled 27,688, it is reported by the A.M.A. This is 2.3 per cent more than the 27,076 enrolled during 1951-1952.

The 6,668 students graduated during the last year exceeds by 279, or 4.4 per cent, the previous record established in 1947, when at the termination of the wartime accelerated program several schools graduated more than one class.



## PRESIDENT'S PAGE

DEAR DOCTOR:

I do not suppose that it is a coincidence that in the last few weeks of each year there occur our most beloved holidays.

This past week we have had Thanksgiving. If we were able to recall, after the traditional dinner, we could most certainly recount many things for which to be thankful. For instance, the authors of our Constitution gave us our four freedoms and a Bill of Rights. We can be thankful that we still live in a country where those freedoms exist and where we value a human life as we value the lives of our children, or even our own.

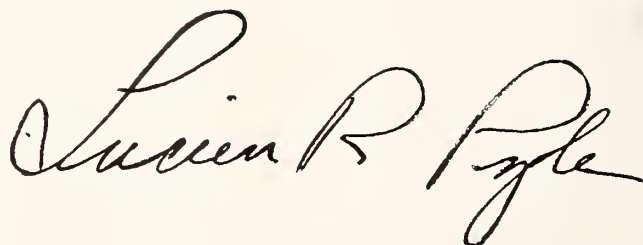
Soon comes Christmas. In a typical American way we will make it a gala occasion. Families and friends will gather together. Gifts will be exchanged. Happiness and a feeling of well being will exist, and bitterness will be forgotten. But I am quite sure that behind the flamboyant sham of American effrontery, we revere this day because of our abiding faith in our universe and its creator.

And then comes December 31. It is a day to take inventory. Some events and accomplishments we will put in the credit column. Others we will put in the debit column. After that, we will strike a trial balance. The analysis of this trial balance will spell either success or failure or the many gradations in between. We will then resolve . . . ?

As evening falls we will mourn the exodus of the old year with the sadness and fervor of an Irish wake. But at midnight we will celebrate and drink to the New Year with the same spirit as a man viewing his first-born son.

May the day never come to us in America when these days mean less to us than they do now. But may the day come to all the people of the earth when peace, and freedom, and trust, and fair dealing, are uppermost in the minds of all. Then they can join us in Thanksgiving and Christmas and an eve of resolving.

To each of you, a Merry Christmas and a Happy New Year.

A handwritten signature in cursive script, reading "Lucien R. Pyle". The signature is written in dark ink and is positioned at the bottom of the page, below the main body of text.

## EDITORIAL COMMENT

### DOCTORS IN STATE GOVERNMENT

Browsing through the archives of the Kansas Medical Society became a rewarding experience a short time ago when it was discovered that Kansas, in its maiden voyage of statehood, was charted under the direction of the medical profession. Many will recall that the first governor was a doctor of medicine, but of less general knowledge is the fact that at the same time the lieutenant governor and the secretary of state also were doctors. Each of the three was among the incorporators of the Kansas Medical Society.

Charles Robinson, M.D., was born in Hardwick, Massachusetts, on July 21, 1818. In 1843 he began practicing medicine. Almost nothing is known of his professional career, but the lure of adventure and the excitement of politics were sufficient to have taken him out of his professional activities on numerous occasions. For example, he joined a gold rush party and traveled to California in 1849. This was possibly not completely successful, because in 1852 Dr. Robinson was practicing medicine in Massachusetts again.

Two years later the New England Aid Society sent Dr. Robinson to Kansas to prepare the way for free-state settlers. Again in this field his activities appear to have been varied because he is credited with having organized the first free school in this territory. He also retained an interest in medicine because his name appears with the incorporators of the Kansas Medical Society who met in Lawrence and began this professional organization on February 10, 1859. Whether the success of this appearance before the territorial legislature or some other factor inspired him to enter politics is not known, but on the date when Kansas achieved statehood Charles Robinson, M.D., became its first governor. His term began on February 9, 1861, and closed in January, 1863. Following this experience he continued his interest in politics and served in the Kansas House of Representatives in 1864 and was a member of the Senate in 1876. Beyond that, nothing further is known of Dr. Robinson's activities except that he died at Lawrence on August 17, 1894.

Also an incorporator was Joseph P. Root, M.D., who was born in Greenwich, Massachusetts, April 23, 1826. He practiced medicine at Hartford, Connecticut, and also exhibited an early interest in politics, having served in the Connecticut state legislature. In 1857 he moved to Wyandotte, now Kansas City, and immediately became active in politics to the extent that he was elected to the territorial Senate of

Kansas within two years of his arrival in the state. When statehood was achieved, Dr. Root was the first lieutenant governor, serving from February 9, 1861, to January, 1863.

In addition to his political interests, Dr. Root indicated a strong interest in medicine. He not only aided in the incorporation of this Society, but became its second president and served in this office from 1860 to 1866, a period longer than that of any other president. He died on July 20, 1885.

The third of this venerable trio of incorporators who achieved political prominence was John Winter Robinson, M.D., who bore no relationship to the other doctor of the same name. Dr. John Robinson was born in Litchfield, Maine, on December 22, 1824. Very little is currently known about him, except that he practiced medicine in Maine and that he moved to Manhattan, Kansas, in 1857 because the climate was presumed to be more healthful than in Maine. After two years in this state, he also was one of the incorporators of the Kansas Medical Society, and when Kansas became a state, this Dr. Robinson was the first secretary of state, also beginning his term on February 9, 1861. His health was poor, and for that reason he resigned his office in July, 1862. He died on December 10, 1863.

No study has been made to compare this with the history of other states, but it appears somewhat singular that the three executive leaders of a state government should all be doctors of medicine and serve their state in their respective capacities at the same time. It is perhaps even more unusual to find this situation existing at the beginning of statehood. For Kansas, the situation has never been repeated. Until the present at least, there has never been another governor who was a doctor of medicine, although four members have served as lieutenant governor.

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### SONG OF THE ANGELS

It is Christmas again with lights and gifts and tinsel and feasting. Almost 2,000 years ago angels sang in the heavens, and a bright star guided shepherds and wise men to Bethlehem. This year those will be missing.

Music will fill the air in profusion, and lights will transform the night into day. There will be gifts abundantly provided for everyone, but something has happened. The emphasis has been altered.

There have been many changes during the past 2,000 years. Wonderful advancements have given us comfort and pleasures and health that no previous generation dared hope to achieve. Knowledge has made us more nearly masters of the world in which we live. We know more than ever before of the air and the space beyond air, of the sea and the black-



ness under the sea, of the land and of the caverns deep below the surface. We have telescopes that carry the heavens almost within our reach, and we have microscopes with which to explore that infinitesimal world too small to observe with the eye.

We may travel at speeds of approaching 1,500 miles an hour and can send messages as well as pictures into the farthest recesses of this earth in an instant. Our genius has given us fearful destructive force and magnificent ability for healing the sick.

Surely this Christmas we would find little to make us envy the shepherds who sat in the quiet of the lonely hillside on that long ago evening, or the wise men riding from far over the desert to lay their gifts at the feet of the King. But they saw the star and they heard the heavens singing!

So in this long period of history the emphasis has changed. There is music, but it comes from the loudspeakers on every lamp post. There are lights in many colors, but they burn with manufactured power. There are gifts of such magnificence as to pale the gold, the frankincense, and the myrrh, but we give those to each other.

You know it cannot be true. You know this is pure sentimentality, groundless, foolish, wasted wishful thinking—but have you ever wondered whether the angels might sing again this year? Is it possible that our cards will sound so eloquent that we shall never hear the far-away choir singing "Peace on earth?" Could our bulbs obliterate that clear still light in the sky? And the gifts—but stop, for our understanding does not want to follow these words.

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### NARCOTICS

Legal prescribing of narcotics by physicians is clearly defined in the Harrison Narcotic Act, as are the regulations under which this may be accomplished. The few variations or exemptions are so insignificant as to be omitted in this discussion. This editorial has to do with relative responsibilities, and because more persons than the physician are involved it has been prepared jointly with the Kansas Pharmaceutical Association.

The physician prescribing narcotics for a patient may expect the pharmacist to fill this order, but not unless certain requirements are fulfilled. The responsibility for the professional decision rests entirely with the physician. No one will question his position in this regard, but beyond that point the pharmacist filling the prescription shares a responsibility and accepts a direct liability with the doctor.

It goes without repeating that the physician must have a registry number in addition to his professional license. This registry number must appear on each narcotic prescription. The date on which the prescription is written must be included, and also the

name and address of the patient and the signature as well as the address of the physician.

A pharmacist may not legally deliver the order until this completed prescription has been received. He cannot accept telephone prescriptions for narcotics. He may not permit them to be mailed or delivered later, nor may he honor stamped or typed signatures or the signature of a nurse. This is not caprice on his part. The pharmacist has these requirements to meet by law, and any physician who requests him to deviate from this procedure places the pharmacist in jeopardy.

Another often difficult and misinterpreted situation occurs when the druggist calls to verify a narcotic prescription. He does so only in an effort to protect the physician and himself. The danger of forgery or subterfuge on the part of addicts is sufficient to justify unusual care, which every physician must quickly recognize to be only reasonable and proper.

The combined efforts of many persons are necessary for the effective control of this dangerous product. It presents a situation where understanding, tolerance, and co-operation on the part of all are necessary, while failure on the part of either the pharmacist or the physician in this regard will always work toward the disadvantage, often toward the embarrassment, and sometimes toward the punishment of both.

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### THE MEDICAL CARE DOLLAR

Frank G. Dickinson, Ph.D., director of the American Medical Association's Bureau of Medical Economic Research, has again prepared statistics on the cost of medical care. This relates to the year 1952 and presents some interesting figures. The material is borrowed from the *Journal of the American Medical Association* but is repeated in this form because many physicians do not take the time necessary for analyzing columns of figures. The following material represents only a portion of what is contained in the study, but it will at least give an indication of the cost of health care in relationship to other living expenses.

Base figures for the purpose of this study are the average for the years 1935 to 1939. This figure is contrasted with the comparable expenditure in 1952. Total consumer expenditures for the base period were 63.6 billions of dollars. In 1952 this had risen to 218.1 billions of dollars. During the same period, the cost of total medical care rose from 2.6 billions to 9.6 billions. Of this last figure, physicians' services have increased from 0.8 to 2.7 billions; hospitals from 0.5 to 2.4 billions.

Even though the actual amount spent appears formidable, and although there has been an increase

in the cost of health services, there are at least three interesting comparisons in this regard. For example, expenditures for alcoholic beverages, for recreation, and for tobacco are each greater than expenditures for physicians' services. The figure for recreation, 11.7 billions, is greater than the total cost of medical care. Even personal care and jewelry are each almost as high as is the expense of physicians' services.

The second point concerns the percentage of the total expenditure that goes for each of the various items. In 1952, 4.4 per cent of all expenditures went for health care. Out of that figure, physicians' services and hospital services shared almost equally, with physicians receiving 1.2 per cent and hospitals 1.1 per cent. It might be interesting to compare these with such items as alcoholic beverages, for which 4.1 per cent of the total consumer expenditure was taken. Recreation is 5.4 per cent, tobacco 2.4 per cent; personal care 1.2 per cent, and jewelry 0.7 per cent.

The third equally interesting comparison, but slightly more difficult to evaluate, might be explained as follows. The base from which the tabulation was taken represents the amount of goods or services that could have been purchased with one week's wages in the 1935-1939 period. The figure given here represents a percentage. It may be illustrated as follows: If the figure were 100 per cent, it would mean that the price of the service or commodity had risen in exactly the same proportion as the increase in wages. In other words, it still requires one week's wages in 1952 to purchase the same amount that required one week's wages in 1935. Where the figures are below 100 per cent, this means that the income level has increased more rapidly than the cost. The figures also indicate the relative rise of the different

items listed and show that medical care has increased to a lesser per cent than have many other commodities.

For example, physicians' fees stand at 50 per cent. This means it would require a half week in 1952 to earn the cost of medical care that would have required a full week's wages in 1935. Hospital rates stand at 95 per cent. The interest here is that the increase in hospital care is almost twice the relative increase of physicians' services.

The following selected commodities may be used as comparisons with the medical care cost. Women's cotton house dresses in 1952 stand at 91 per cent; men's shoes, 87 per cent; furniture, 76 per cent; food, 76 per cent; personal care, 64 per cent; recreation, 57 per cent; transportation, 61 per cent, and rent, 47 per cent.

For fear that the above may not contain all factors desired for an understanding of the figures, statistics issued by the United States Department of Labor estimate the base period average weekly earnings of production workers in manufacturing industries to have been \$22.42. In 1952, this figure is listed as \$67.97. Therefore, the paragraph above actually says that with the high rate of pay in 1952, this worker would have earned in one-half week what it would have taken him a full week in 1935 to earn for a similar physician's service.

So, finally, two points can be established, the first being that while health services have risen in cost, they have risen to a smaller degree than many other standard items, and, second, that the increase in earning power has risen rapidly enough to enable medical services to be purchased with half the working time that was required for the purchase of the same service in 1935.

### SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

John C. Artman, M.D.  
2005 Lincoln Drive  
Hays, Kansas

Rex C. Belisle, M.D.  
Plainville, Kansas

Laurel G. Case, M.D.  
316 South Factory Street  
Enterprise, Kansas

Thomas W. Critchfield, M.D.  
4509 West 74th Place  
Mission, Kansas

William J. Kridelbaugh, M.D.  
Route 4, Radio Lane  
Arkansas City, Kansas

James G. Lee, Jr., M.D.  
731 Ann Avenue  
Kansas City, Kansas

Hampton W. Shirer, M.D.  
5321 West 50th Street  
Mission, Kansas



# Clinical Pathological Conference\*

## CASE PRESENTATION

Protocol: Dr. Robert Weber (resident in medicine): This patient was admitted at 8:00 p. m. and expired at 10:25 p. m. Chief complaint was unconsciousness of four hours' duration.

This patient was first seen in the outpatient department in August, 1939, when a diagnosis of alcoholic gastritis and tertiary lues was made. The patient next was seen in the outpatient department in November, 1951, because of diabetes. Hospitalization was recommended. The patient did not comply and was not seen again until the present admission. She had been a known diabetic since 1949. During the first two years of this illness, she followed the diet and took insulin regularly. Since November, 1951, she had been negligent in her diabetic regimen. Approximately three weeks prior to admission, the patient developed an upper respiratory infection and had been bedfast since.

On February 14, 1953, the patient complained of pain in the left ear and was given an injection by her local physician. The pain, however, persisted until February 15, 1953, when the ear began draining. On the morning of admission the patient seemed to be all right, according to her husband, but was found unconscious upon his return from work and had a grand mal convulsion.

Past history was essentially negative except as stated above. The family history indicated that the mother died of dropsy at age 49. No family history of diabetes was recalled.

System review revealed that the patient had had occasional episodes of abdominal pain, "bloating," and nausea. During the past few years there had been occasional episodes of hematemesis.

Physical examination revealed a well developed, well nourished female who was comatose with typical Kussmaul respiration and moderate dehydration. The eyes were deviated upward and toward the left. Blood pressure was 160/120, pulse 110. A purulent discharge was noted in the left ear. There was grade one arteriosclerotic retinopathy. Nuchal rigidity was elicited. The lung fields were clear to percussion and auscultation. No cardiac enlargement was demonstrated, and no murmurs were present. The liver was firm and palpable three centimeters below the costal margin. Neurological examination was essentially negative.

Laboratory studies at the time of admission re-

vealed a blood sugar of 562 mg. per cent;  $\text{CO}_2$  of 7.6 meq./L; sodium, 150 meq./L; potassium, 4.1 meq./L; chloride, 108 meq./L; NPN, 28.5 mg. per cent. Urine analysis showed specific gravity 1.012, albumin one plus, sugar four plus, and acetone strongly positive.

Hospital course: The patient was given 100 units of regular insulin intravenously at the time of admission and later received an additional 100 units of regular insulin intramuscularly. She remained comatose throughout the period of hospitalization but began to respond to painful stimuli at approximately 10:00 p. m. At this time she had a grand mal convulsion and, shortly thereafter, started Cheyne-Stokes respirations and expired quietly. Preceding death the respiratory rhythm was grossly irregular for a period of 5 to 10 minutes.

Dr. Mahlon Delp (chairman): Any questions of Dr. Weber?

Q: Were any fluids given during this last episode, particularly potassium?

Dr. Weber: The patient had no potassium. She did not receive more than a small amount of fluid.

Dr. Delp: A thousand cc. normal saline and 1000 cc. one-sixth molar sodium lactate were ordered. I don't know how much of it she actually received.

Q: Was a spinal puncture performed?

Dr. Weber: No.

Q: What about the blood pressure readings when she was in the hospital previously?

Dr. Delp: Two previous blood pressure readings were made in the outpatient department in November, 1951. One of them was 135/100; the other was 130/105.

Q: What was the temperature of the patient?

Dr. Weber: It was 102°. Only one temperature reading was recorded.

Q: The respirations at the last—were they grossly irregular?

Dr. Delp: It was recorded as Cheyne-Stokes respiration, though the intern noted, "This is not Cheyne-Stokes respiration but is Biot's respiration."

Q: What additional findings are there?

Dr. Delp: The patient did have a quantitative serology, 32 Kahn units recorded in 1951. She had a positive serology of four-plus—no quantitative determination in 1939 on her first visit to the outpatient department. She had no manifestations of syphilis whatsoever at that time other than the positive serology.

Q: What treatment had she had for syphilis?

Dr. Delp: She had eight shots of bismuth here. We don't know whether she had any other form of

\*From the University of Kansas Medical Center. Edited by Glen R. Shepherd, M.D., and Mahlon Delp, M.D., from recordings of the conference participated in by the departments of medicine, otolaryngology, surgery (neurosurgery) and pathology, and the junior and senior classes of medical students.

antiluetic therapy or not, because she was lost for a period of 12 years. I assume that she did have treatment elsewhere—at the health department—and it probably was penicillin.

Q: What about the pupils—were they equal? Did they react to light?

Dr. Weber: They were equal. No other description is given in the chart.

Q: What about the muscle tone?

Dr. Weber: I would say that the muscle tone was normal.

Dr. Robert Bolinger: Was the coma of a restless type?

Dr. Weber: It was not a restless type; she was not thrashing about.

Dr. Delp: There is one thing to note about this patient, in some of the histories that were taken. When the husband returned from work that evening, about 5:00 or 6:00 o'clock, he found the patient lying across the bed. She seemed to be confused but still responding. He gave her a glass of water and immediately after she drank the water—I assume she drank it—she had a convulsive seizure. Subsequently she was quietly comatose until about 15 or 20 minutes before she expired, at which time she developed a marked restlessness.

We do have an electrocardiographic tracing. May we have that now?

Dr. E. Grey Dimond (medicine): The rate is approximately 150 and regular. The basic rhythm is probably sinus tachycardia. The tall peaked T waves and widened Q-T interval are suggestive of hyperpotassemia. There are no changes present to suggest any old or recent myocardial infarction.

Dr. Delp: We have no x-rays on this patient.

To review: We had observed this patient at irregular intervals since 1939. Though the patient had

syphilis, I think it should be called latent syphilis. There were no manifestations of syphilis at the time of her first visit. I am not sure that anyone has demonstrated syphilis so far in the findings as recorded.

At the time the patient came to the outpatient department first, she was drinking too much—three pints of whiskey and four quarts of beer a week. She wanted to discontinue it and was seeking advice in that regard.

One other thing—she had been vomiting blood. I don't know whether that has been brought out in the history. On many occasions throughout the next 12 or 14 years, this patient vomited blood. At the time she was seen in the outpatient department for the first time, it was thought that probably she did have a gastritis from the excessive alcohol intake.

It was first recorded in 1939 that she had a large liver. You heard Dr. Weber say that she had a large liver, a liver down three fingers, at the time of her admission to the hospital on this occasion. Whether or not that is significant, I am uncertain.

In 1949, the patient was found to have hyperglycemia. I said hyperglycemia; I did not say diabetes. I think it is up to you to decide whether or not she had diabetes. We do have the reported blood sugar of 560 mg. per cent with a  $\text{CO}_2$  of 13 meq. on one visit to the outpatient department. The patient was ambulatory and was indoctrinated in a diet. She did not reappear until she came to the emergency room at the time of her last admission to the hospital. It seems likely that she was tolerating a blood sugar of 560 with a fair amount of ease. She had been on insulin in the past, but she was not on insulin when admitted to the hospital. I am not certain whether or not that is significant.

Next, we know that the patient had a respiratory infection with a painful and discharging ear. That seems to be the first element in her present history.

Next of importance is the history of a convulsion, witnessed by her husband, and subsequent convulsions witnessed here at the hospital. I think you have to decide whether the patient's convulsions were metabolic or primarily neurologic in origin and whether the comatose state was of importance.

There are a number of items that should be discussed after we hear of the pathology. There was a spinal tap on this patient, but it was done after death, making it a part of the postmortem findings.

Will you discuss this case, Mr. Rapport?

#### DIFFERENTIAL DIAGNOSIS

Mr. Samuel Rapport (senior student): The case presents the problem of the unconscious patient and more specifically, the problem of a known diabetic in coma.

If the coma is not readily explained by omission

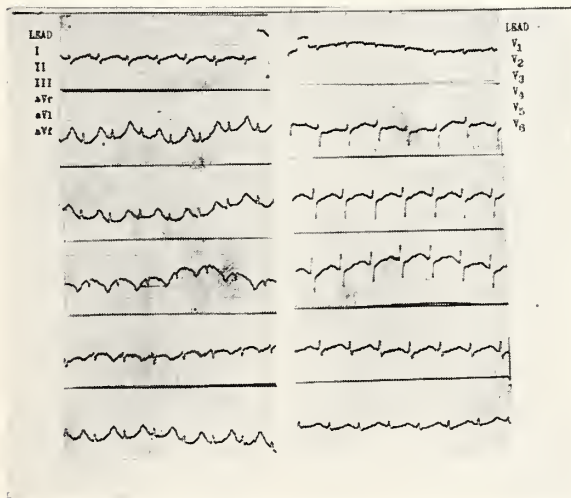


Figure 1. EKG showing tall peaked T waves and widened Q-T interval suggestive of hyperpotassemia.



of insulin or by failure to take the proper dosage of insulin, it is the responsibility of the examining physician to search for some complication which might have precipitated it.

Ketosis, with its sequelae of acidosis and coma, usually is precipitated by one of the following disorders: infections of the respiratory, the genitourinary, or the gastrointestinal tract; surgical procedures or trauma; or gastrointestinal disturbances with reduction of food intake or vomiting.

In our patient today we have a history of what appears to be diabetes, and her symptomatology was reiterated by Dr. Weber and Dr. Delp so I won't repeat it. However, Dr. Delp pointed out certain findings upon admission which are not indicative of uncomplicated diabetic acidosis. I think we must make some effort to explain those.

Diabetic acidosis is obvious in this instance. A patient with a known history of diabetes was comatose with typical Kussmaul respiration and dehydration on admission. In addition to that, the laboratory work revealed 562 mg. per cent sugar; more significantly, a  $\text{CO}_2$  was 7.6 meq./L. Urine revealed albumin one-plus, sugar four-plus, and acetone strongly positive. I think we have here adequate criteria for the diagnosis of diabetic acidosis.

It is equally obvious that there was something else the matter with the patient, as evidenced by the deviation of her eyes, the nuchal rigidity, the grand mal convulsions, the temperature of  $102^\circ$ . It was Joslin who said, "When you see a diabetic in coma, with fever, your index of suspicion should certainly be raised."

This patient had a blood pressure of 160/120, another thing not found in uncomplicated diabetic acidosis and coma.

I think the signs that were found, particularly the deviation of the eyes, the nuchal rigidity, and the increased temperature, are indicative of some sort of meningeal irritation. This meningeal irritation could be the result of many things.

Let's consider first the possibility of a meningitis. This patient had a history of an upper respiratory infection of three weeks' duration, with a draining infected ear of two days' duration. Not uncommonly a complication of otitis media or mastoiditis is a pyogenic meningitis. The factors in favor of a pyogenic meningitis are: first, the patient did have the preceding focus of infection; second, the patient had a fever of  $102^\circ$ ; third, the patient had indications of meningitis; at least, she had nuchal rigidity. In a comatose patient it's hard to determine whether or not some of the outstanding characteristics of meningitis are present.

It is possible that this patient may have had a cerebral vascular accident. However, it seems unlikely in the absence of any clearly defined localizing neuro-

logical findings. There are several types of cerebral vascular accidents: subarachnoid hemorrhage, subdural or epidural hematoma, and others. But I don't think we have enough evidence from the protocol to indicate any of these.

This patient could have had a brain abscess. Alpers states that as high as 50 per cent of brain abscesses may result from some infection of the ear, and this patient had an ear infection. However, meningeal signs in brain abscess frequently are absent. I doubt if this patient could have developed a brain abscess in so short a time; however, it would not be impossible. Also, with brain abscess we expect to find some kind of a focal neurological involvement, of which we have no evidence in this patient.

The patient could have had an extradural abscess. Here, other than meningeal irritation, we might expect to find on x-ray some characteristic alterations. This can be a difficult diagnosis to make.

I think, in light of the facts that we have, the most likely complication of this patient's diabetic acidosis would be a meningitis. The problem then is to determine the etiology of the meningitis.

Our best possibility is that this was pyogenic meningitis, probably of streptococcal or pneumococcal etiology, since it followed so closely the purulent infection of the ear. However, we can't rule out other types of meningitis, particularly tuberculous meningitis. The patient had what apparently was conjugate deviation of the eyes, which may be found in tuberculous meningitis. All the situations discussed may produce convulsions, which this patient had—meningitis, cerebral vascular accident, or a brain abscess.

I think tuberculous meningitis should not be definitely ruled out. However, I will rule it out on the basis of the patient's temperature, which I think was a little too high for that. Another point is that tuberculous meningitis is not common in older individuals, although it does occur. It's more frequently found in children.

We have to think about lues, although a syphilitic meningitis usually follows the primary infection by one to two years. Convulsions are common but you see also cranial palsy, hemiplegia, and papilledema, which were not present in this patient. Therefore, I think we can also rule out this type of meningitis.

Therefore, my final diagnosis will be diabetic acidosis with coma and some form of pyogenic meningitis, the etiology of which would have to depend upon spinal fluid studies.

I will try to explain some of the symptoms this patient had. One was hepatomegaly. There is a possibility, with an alcoholic history, that this patient could have had cirrhosis. I don't think we have any clear cut evidence that she did. Fatty infiltration in diabetics is not uncommon. My impression is that

the fatty infiltration probably was one complication of her diabetes.

The patient had a hematemesis. I think the most likely explanation for this symptom was alcoholic gastritis. However, diabetic patients bleed rather easily into the gastrointestinal tract. Diabetics with peptic ulcers bleed in a higher percentage of cases than do non-diabetics.

The patient had high blood pressure. I think the best way to account for this is on the basis of some sort of diabetic nephropathy. Not infrequently, diabetics show arteriolar sclerosis, intracapillary arteriolar sclerosis, or acute or chronic pyelonephritis. Some physicians are prone, when they see a diabetic with any type of renal involvement, to think of Kimmelstiel-Wilson's disease. I don't think this is justified in all cases. More frequently, I think, you will find a mixture of arteriolar sclerosis and pyelonephritis plus an intracapillary arteriolar sclerosis. I think any one of these conditions, or possibly all three of them, could have accounted for this patient's elevated blood pressure.

The patient was dehydrated. I think most of us are familiar with the reason for diabetics with acidosis being dehydrated.

Now, we attempt to explain why this patient died. I think she died from respiratory failure, which isn't saying a lot. I think this failure was on the basis of toxic or inflammatory depression of the respiratory center. It is possible that this patient died because of hyperpotassemia; however, there seems to be some disagreement as to whether hyperpotassemia existed.

Dr. Delp: It is unusual, I think, for a patient known to be a diabetic for only four years to have a diabetic nephropathy. Perhaps we can offer some other explanation for the hypertension.

#### CLINICAL DISCUSSION

Dr. Delp: Leukocytosis and febrile states—the combination of fever and leukocytosis—are markedly effective in decreasing the effect of insulin. Even hyperpyrexia, artificial hyperpyrexia, will decrease the effectiveness of insulin. And if it's associated with leukocytosis, it certainly has a considerably greater effect. As a matter of fact, in those disease states in which leukopenia occurs, the vitiation of the effectiveness of insulin is much less.

Dr. Bolinger, have you ever seen a patient with diabetic acidosis whose illness was ushered in by convulsive seizures?

Dr. Robert Bolinger (medicine): No.

Dr. Delp: This patient's history is unique. When her husband left her at home in the morning, she was well. He came home and found her lying across the bed. He gave her a drink of water, and she had a convulsive seizure. Is that the usual history preceding diabetic coma?

Dr. Bolinger: No. I'm not sure that the diagnosis of diabetic acidosis is obvious, although it probably enters into the differential diagnosis.

Dr. Delp: We'd like to have some comments from Dr. Williamson and Dr. Steegmann regarding this patient's convulsive seizures and comatose state. Perhaps you can elucidate whether they were related to her acidosis or were entirely separate from it. Dr. Williamson?

Dr. William P. Williamson (neurosurgery): I think this patient had a complication in her brain that caused the fever, stiff neck, stupor, coma, and death. With a draining ear, I think it was meningitis, the pus having broken through her middle ear into the intracranial cavity. Not only does infection make the diabetes worse, but diabetes makes the infection worse. I don't think it's out of the question at all for a patient to die with fulminating meningitis in 8½ hours, as this patient did. Convulsions can occur from meningitis with pus on the surface of the brain or beginning to invade the surface of the brain.

I think the student was right in ruling out brain abscess, because there wasn't time enough for a brain abscess. The patient died much too quickly. It takes about 10 days for the brain to suppurate and wall off into an abscess. She could have had so-called beginning cerebritis, or infection into the brain, but I am sure that it was not walled off into a suppurative surgical abscess.

I think purulent meningitis from the middle ear can explain this entire picture. If you want to guess as to the type, let us call it pneumococcic. A pneumococcic meningitis can be virulent. I feel that a pneumococcic meningitis from the middle ear explains the neurological complications in this patient.

Dr. A. T. Steegmann (medicine-neurology): I agree with Dr. Williamson in all that he says. I would like to state one thing about the question of acidosis. In general, acidosis increases the threshold for convulsions. Convulsions are not so likely to occur as in a state of alkalosis. Of course, if the patient has an actual meningeal infection, he may go into convulsions in spite of the acidosis. But for many years we treated convulsive disorders by the use of dehydration, which really produced acidosis in the patient.

Dr. Delp: Dr. Wood, the opinion seems to be predominant that this patient did have meningitis and that it must have had something to do with a middle ear infection. Do you agree with Dr. Williamson's comment about the infecting organisms?

Dr. James Wood (otolaryngology): Since it does point to the ear infection, I'll say that the microorganisms causing otitis media roughly parallel those of the nasopharynx, and the predominating organism usually is streptococcus hemolyticus. More cases come



to autopsy from streptococcus hemolyticus than from pneumococcus Type III, with the antibiotic therapy used these days. However, pneumococcus Type III is the organism second in frequency.

This patient had an upper respiratory infection for approximately three weeks. That would indicate that otitis media did come from the nasopharynx, and, therefore, it was purulent otitis media. I would tend to think that purulent otitis media was more apt to be from streptococcus hemolyticus than from pneumococcus Type III. Pneumococcus Type III, although fulminating, will give a thin, bloody type of secretion.

When the patient complained of the pain two days before the convulsion, we think it a serious symptom. The mastoid process is not endowed with a large amount of pain sensitivity or nerve endings. Hence, the pain probably was from the middle ear. Therefore, we think of pus under pressure. We also think of pus touching the dura or part of the lateral sinus, which is highly sensitive. When the ear broke and drained, she got relief from this pressure, but probably in the meantime the labyrinthitis already had begun, either positive labyrinthitis or perilyabyrinthitis.

The only way a membranous labyrinthitis can occur is for the infection to invade through one of the oval windows of the internal auditory meatus or split through the base of the cochlea of the middle ear.

Though the patient might have had a labyrinthitis, it might have been present some time before. Vomiting goes with labyrinthitis. Also, in labyrinthitis the patient would tend to lie on the side away from the ear involved and turn her eyes toward the ear involved. It was the left ear in this patient, and the eyes were deviated to the side of the involvement.

#### PATHOLOGY REPORT

Dr. Leland Stoddard (pathology): This report

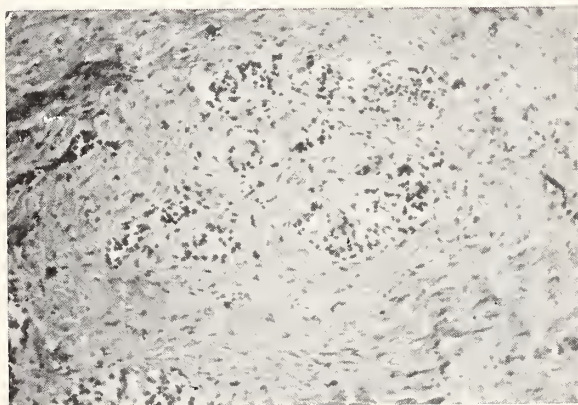


Figure 2. Fibrosis of the pancreas. Clumps of small cells are surviving islets. No acinar tissue remains.

will confine itself largely to confirming the diagnoses and comments that already have been made. There is some question as to whether or not this patient had diabetes and diabetic acidosis. Those are clinical and chemical diagnoses, not anatomical diagnoses. However, I shall present some observations that would fit well with the idea that this patient was diabetic.

The pancreas was atrophic and made up almost exclusively of connective and adipose tissue. Almost no exocrine tissue remained. There were a few islets. Where islets were found, they were often in clusters as though perhaps a surviving islet or two had undergone hyperplasia.

The slide shows a few surviving islets under a higher magnification and also illustrates the dense fibrous tissue that made up most of the pancreas.

Before considering how these pancreatic changes may have come about, we might say that chronic pancreatitis, or atrophy and fibrosis of the pancreas, is a lesion that may be associated with diabetes mellitus. As a matter of fact, this particular lesion was emphasized in the past, and some authorities even insisted that without pancreatitis there was not diabetes. We would not agree with that today, of course.

Our interest today is centered in functional ideas about diabetes, perhaps even various types of diabetes. Maybe diabetes mellitus really is not one disease but several. The interrelationships of islets, pituitary, adrenals, and liver are the things that intrigue us today, as well as enzyme and biochemical studies. No doubt this is how progress will come. But in the meantime we should not forget that in the literature there are many observations that some cases of diabetes are associated with fibrosis and atrophy of the pancreas, even though some islets remain.

The pancreatic atrophy and fibrosis may be related to one or more other lesions in this case. This patient had chronic cholecystitis and cholelithiasis. Although

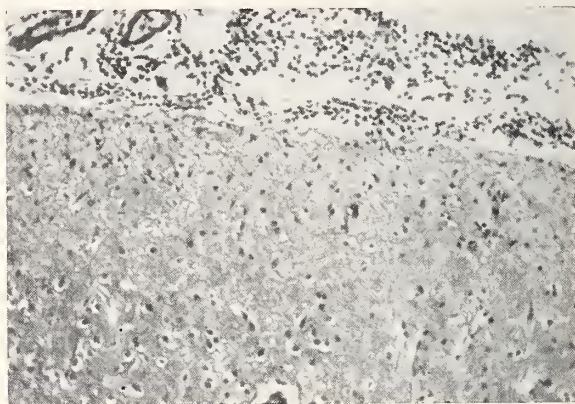


Figure 3. Acute meningitis. Numerous polymorphonuclear leukocytes are present in the meninges overlying an area of the cerebral cortex.

the wall of the gallbladder was autolyzed, as it usually is at autopsy, one can see chronic inflammatory cells and some fibrosis in this histological section. It is known that true pancreatitis frequently is associated with gallstones, even though the pathogenesis of the pancreatitis is not too clear.

Another possibility is that this patient was a chronic alcoholic and had acute alcoholic episodes. With acute alcoholic episodes, there often is acute pancreatitis with necrosis and inflammatory reaction. It would be possible that at some time in the not too distant past the patient had suffered from such an attack. However, it would seem there should be a better history if she really had had a genuine episode of acute hemorrhagic pancreatitis.

Those are the possibilities I think of to account for the pancreatic lesions, except to mention that there were calculi in the pancreatic ducts. Such stones might, of course, slowly cause atrophy and fibrosis, but they might also be sequellae of pancreatic destruction from some other cause.

What happened in the liver? There are many reasons why the liver might have been injured. The patient was an alcoholic, as has been pointed out, and also probably diabetic. Both conditions lead to fatty infiltration which in turn produces diffuse fibrosis, that is, Laennec's cirrhosis. Furthermore, there were gallstones, and one might wonder whether there could be biliary cirrhosis. Microscopic examination of the liver showed absence of any kind of cirrhosis, but there was fatty change.

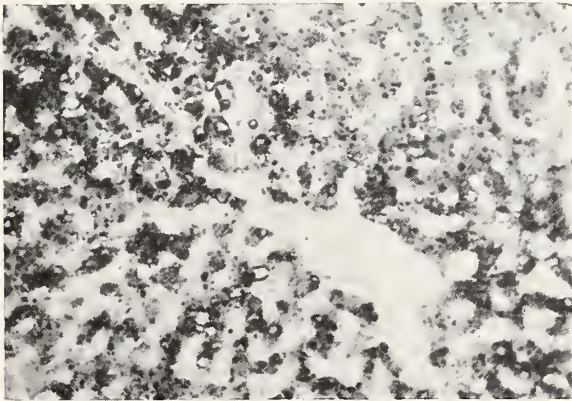


Figure 4. Fatty change of the liver. With an Oil Red O stain of a frozen section, globules of fat (black) are seen in cords of parenchymal cells about a central vein.

Hyaline arterio- and arteriolosclerosis in mild focal form was found in several places. This lesion we relate to hypertension, which the patient had had for at least two years. Also, there was a mild degree of cardiac hypertrophy that can be related to the hypertension. Now, why the hypertension? It already has been pointed out that diabetics sometimes have

trouble with their kidneys. The anatomical findings were entirely compatible with chronic pyelonephritis of advanced degree.

The Kimmelstiel-Wilson lesion has been mentioned, but for good reasons would not be expected in this case. There were some interesting changes, however. The Kimmelstiel-Wilson lesion really is not just one lesion; it is many. The intercapillary sclerosis is the part usually emphasized. Associated with it, there frequently is hyalinization of the basement membranes of the tubules, and that was present in this case. In addition, there was an interstitial deposition of amorphous hyaline material, which also is characteristic of the Kimmelstiel-Wilson lesion and other nephropathies characterized clinically by the nephrotic syndrome. A further lesion in the Kimmelstiel-Wilson complex is a peculiar type of capsular change, hyalinization of the capsule of the glomerulus. However, that lesion is not specific. It was found in occasional fields in this case. That's all I can say. Whether there were early changes here that in 10 or 15 years would have gone on to be associated with intercapillary sclerosis, I don't see how one could know.

Dr. Moriarty, who performed the autopsy, described pus within the petrous temporal on the left. Unfortunately, our blocks are not well enough oriented to answer many of the questions and problems that have been raised with regard to how far the infection had gone. But there was an acute inflammatory reaction in the petrous temporal.

There is no difficulty in illustrating the acute meningitis. From the exudate in the meninges and from tissues recovered at autopsy, a type nine pneumococcus was cultured. The meninges were altered by an exudative inflammatory reaction, most of the cells being polymorphonuclear leukocytes. That was the extent of the inflammatory process. There was no abscess and no diffuse inflammation of the brain.

High power microscopy showed that in addition to the leukocytes, there were cocci in the meninges and in some of the leukocytes.

And finally, related perhaps to diabetic acidosis, was an extensive degree of acute fatty infiltration of the liver.

Fat was found in all parts of the lobules throughout the liver. I would consider that acute and could not relate it to any of the chronic processes in this patient.

It would seem likely that diabetes was of short duration because atherosclerosis was virtually absent in this patient. I would like to mention parenthetically that there were no anatomical manifestations of syphilis.

#### ANATOMICAL DIAGNOSIS

##### *Primary*

Chronic cholecystitis and cholelithiasis.



Lymphocytic infiltration of portal fields of liver, moderate.

Multiple calculi of the pancreas.

Chronic fibrosis of the pancreas, advanced (history of chronic alcoholism of unknown duration and of diabetes mellitus, four years).

Fibrosis of the splenic vein.

Healed infarct of the spleen.

Fibrous adhesions of omentum of spleen and left lobe of liver.

Chronic pyelonephritis, bilateral, advanced.

Hyaline thickening of tubular basement membranes and interstitial hyalinization of kidneys compatible with the Kimmelstiel-Wilson lesion (absence of intercapillary hyalinization).

Slight focal hyaline arterio- and arteriolosclerosis of kidneys, adrenal glands, and liver (history of hypertension, 130/105 two years before death and 160/120 the day of death).

Hypertrophy and dilatation of the heart, 450 grams.

Focal fibrosis of the myocardium, slight.

Fat infiltration of the heart (history of obesity).

Purulent otitis media, left (history of upper respiratory infection, three weeks, and of left otitis media two days before death).

Acute purulent meningitis, type IX pneumococcus.

Fatty metamorphosis of the liver, moderate.

Early bronchopneumonia, bilateral.

#### *Accessory*

Two lung cysts of bronchiectatic type of the upper lobe, left, with secondary moniliasis.

Fibrous adhesions of the lower lobe right lung and apex of left lung.

Pleural thickening of both apices of lungs.

Diverticula of the sigmoid colon.

Adhesions binding the greater omentum to the left diaphragm and the spleen.

Exostosis of the symphysis pubis.

Healed scar on left neck.

Anthraxis, lungs, thoracic and abdominal lymph nodes.

Chronic cystic cervicitis, slight.

#### SUMMARY

The diabetic in coma can present a complex problem, as in this case, for it is not safe to assume the coma is due to diabetic acidosis. The differential diagnostic discipline applied here would have quickly revealed the neurological disease. Obviously, the neurologic lesion held priority for therapy.

Previous observations of this patient's diabetes should have created a high degree of suspicion in accepting a diagnosis of diabetic acidosis and should have made the administration of insulin more cautious.

The electrocardiogram here strongly suggests hyperpotassemia as a factor in death.

#### COORDINATORS OF CANCER TEACHING MEET

The sixth annual meeting of the coordinators of cancer teaching in medical and dental schools of the United States was held in Kansas City, October 8-10. One hundred thirty teachers were present to discuss mutual problems and learn about teaching and research developments at the University of Kansas Medical Center.

An open house was held at the medical school on October 8. The program concerned the use of television and other cancer teaching audiovisual aids and included a tour of research facilities in the new Medical Sciences Building. Panel discussions, talks, and motion pictures on cancer teaching made up the program for October 9 and the morning of October 10, and talks on cancer research were given on the final afternoon. Chancellor Franklin D. Murphy gave the third Samuel Harvey oration at a banquet at the Town House on October 9.

The program included the following subjects and speakers from the University of Kansas School of Medicine: Address of Welcome, Dean W. Clarke Wescoe; "The Use of Color Television in Cancer Teaching," Dr. Paul W. Schafer, professor of surgery; "Observations on the Effect of 6-Mercaptopurine on Acute Leukemia," Dr. Sloan J. Wilson, associate professor of medicine and oncology; "Problems in the Relationship of In Situ Carcinoma to Invasive Carcinoma of the Cervix," Dr. Leland D. Stoddard, associate professor of pathology; "Serodiagnostic Tests for Cancer," Dr. Jack H. Hill, associate in pathology; "Histochemical Studies of Lipids in Testis and Adrenal Gland following Estrogen Administration," Dr. Harlan I. Firminger, associate professor of pathology and oncology; "Radioisotope Studies of Tumor and Host Protein Metabolism," Dr. Chauncey G. Bly, assistant professor of pathology and oncology; "Correlated Studies on Liver Necrosis" and "Integration of Cancer Instruction at the University of Kansas," Dr. Robert E. Stowell, professor of pathology and oncology.

The group does not have a constitution or officers, but each year elects a chairman to appoint committees and conduct business until the next annual meeting. Dr. Robert E. Stowell was elected chairman for the current year.

Of the million hospital beds needed during the next 15 or 20 years, two-thirds will be for the chronic sick, including mental and tuberculous patients.—*A. P. Merrill, M.D., New York State Medical Journal, October 1, 1952.*

## ACTIVITIES OF MEMBERS

Dr. Hilbert P. Jubelt, Manhattan, has been elected chairman of the Riley County-Manhattan Health Board.

Dr. E. V. Thiehoff, head of the Department of Preventive Medicine and Public Health at the University of Kansas Medical Center, gave the first of a series of six lectures to Army physicians, nurses, and social workers at the Fort Riley Hospital late in October. His series of talks will outline current methods of prevention of disease.

Dr. Warren F. Bernstorff, Winfield, was one of the speakers at a health workshop held in Clay Center, October 28.

Dr. LeGrande B. Byington, Kansas City, participated in a panel discussion on "Transition in Venereal Disease Control" at a seminar in Chicago, November 19 and 20, under the sponsorship of the United States Public Health Service.

The Gelvin-Haughey Clinic, Concordia, announces that Dr. Paul H. Schraer, formerly of Detroit, Michigan, is now radiologist for the clinic and for St. Joseph's Hospital. Dr. Schraer was assistant radiologist at Pennsylvania Hospital until World War II, when he spent four years in the Navy.

Dr. H. L. Bunker, Sr., Junction City, has been elected president of an organization of physicians, dentists, pharmacists, and chiropractors in Junction City, succeeding Dr. Robert M. Carr.

Dr. Findley Law, a 1951 graduate of the University of Kansas School of Medicine who served his internship at St. Margaret's Hospital, Kansas City, has opened an office in Bird City.

Dr. James B. Weaver, head of the Section of Orthopedic Surgery at the University of Kansas Medical Center, addressed a joint session of the American Legion and its auxiliary at a meeting held in Emporia on November 15.

The Wichita Clinic announces that Dr. M. V. Holman, who formerly practiced in Kinsley, is now on its staff and will specialize in anesthesiology.

Dr. Dwight Lawson, Topeka, spoke on obesity at

a meeting of the Kiwanis Club at Eskridge last month.

Dr. A. M. Cherner, Dr. M. C. Eddy, Dr. L. W. Reynolds, and Dr. H. R. Custer, Hays, were four speakers who took part in a conference on cancer nursing held at Hays, November 30 and December 1. Attending the conference were nurses from that section of the state.

Dr. Cyril V. Black, Pratt, has resigned as health officer of Pratt County.

Dr. B. Dan Ferguson, Bird City, recently received orders to report for active duty in the Air Force.

Among those taking part in a program given at Hutchinson on November 1 for members of the Kansas Medical Assistants' Society were Dr. R. A. Crawford and Dr. L. E. Dickelman of Hutchinson and Dr. Murray C. Eddy of Hays.

Dr. Donald W. Selzer, who formerly practiced in Manhattan, returned last month from service with the Army in the Marshall Islands. He is now stationed in Fort Riley.

Dr. M. M. Tinterow, Wichita, addressed a group of nurse anesthetists at a meeting held at the Lassen Hotel, Wichita, last month.

"Your Heart" was the subject of a talk given by Dr. E. Grey Dimond, of the University of Kansas Medical Center, at a meeting of the American Legion and its auxiliary at Olathe last month.

Dr. Ray Busenbark, who has been practicing in Kansas City for many years, has announced his retirement, effective December 1. He and Mrs. Busenbark plan to move to California.

Dr. M. R. Fitzpatrick has returned to his practice in Kansas City after a tour of duty with the Army, during which time he spent six months in Korea.

Dr. C. V. Black, Pratt, addressed the Woman's Auxiliary to the Pratt County Medical Society on the subject of public health last month.

Dr. Paul H. Lorhan, chief of the Department of Anesthesiology at the University of Kansas Medical Center, was elected second vice-president of the American Society of Anesthesiologists at the group's annual meeting in Seattle last month.



## COUNTY SOCIETIES

The Wyandotte County Medical Society met at the City-County Health Building, Kansas City, on October 20. Speaker of the evening was Dr. Frank L. Feierabend, president of Blue Shield, who spoke on "Current Cost of Medical Care as It Affects Blue Cross and Blue Shield."

Dr. Harris B. Shumacker, professor of surgery at the Indiana University Medical Center, Indianapolis, spoke on "Problems in the Surgical Management of Peripheral Vascular Disorders" at a dinner meeting of the Shawnee County Medical Society held on November 2.

A meeting of the Montgomery County Society was held at the Booth Hotel, Independence, October 21. Twenty-three members attended and heard a paper, "X-ray Pathology in Pediatrics," given by Dr. Vern Lockard, radiologist who practices in Bartlesville and in Coffeyville.

A symposium on the diagnosis and treatment of cancer of the cervix formed the program at a meeting of the Sedgwick County Society held at the Lassen Hotel, Wichita, on November 3. Speakers were Doctors H. C. Clark, M. W. Hall, William J. Reals, and J. R. Stark. Dr. E. X. Crowley and Dr. N. C. Siebert were discussants. The president of the Kansas Medical Society, Dr. Lucien R. Pyle, Topeka, was a special guest at the meeting.

Physicians of the 12th Councilor District of the Kansas Medical Society held a dinner meeting at the Lora-Locke Hotel, Dodge City, November 2. Guests at the meeting were Dr. Lucien R. Pyle, president, and Mr. Oliver E. Ebel, secretary of the Kansas Medical Society.

Thirty members of the Crawford County Medical Society held a joint dinner meeting with members of the Auxiliary at the Hotel Besse, Pittsburg, on October 29. Dr. Jack W. Graves, Wichita, was guest speaker.

A meeting of the Northwest Kansas Medical Society was held at the Colby Country Club on November 1. The president and executive secretary of the state organization, Dr. Lucien R. Pyle and Mr. Oliver E. Ebel, Topeka, were speakers.

A meeting of physicians of Harvey, McPherson, and Marion counties was held in Marion on November 5. Dr. E. Grey Dimond, of the University of Kansas Medical Center, was guest speaker.

Dr. John D. Hilliard, Medicine Lodge, was elected president of the Harper, Sumner, and Barber Tri-County Medical Society at a meeting held last month. Dr. L. W. Patzkowsky, Kiowa, was named secretary, and Dr. Dale C. McCarty and Dr. H. Yasuda were named councilors.

Sponsorship of a diabetes detection drive was one of last month's projects of the Atchison County Medical Society and the Lyon County Medical Society and their auxiliaries. Free testing tablets were distributed throughout the counties.

A meeting of the Wilson County Society, held November 11 at the Neodesha Methodist Church, featured election of officers. The following were chosen: Dr. Glen M. McCray, president; Dr. J. W. McGuire, vice-president, and Dr. C. E. Stevenson, secretary-treasurer. The business session followed a dinner meeting with members of the auxiliary.

Dr. John B. Dixon, Parsons, was named president of the Labette County Society at its November meeting. Dr. Hal A. Burnett will be vice-president, and Dr. Charles F. Henderson will serve as secretary.

### POSTGRADUATE COURSE FOR CARDIOLOGISTS

Forty physicians from 27 Kansas cities were present in Emporia, October 28-31, for a postgraduate course in cardiovascular diseases sponsored by the Committee on the Study of Heart Disease of the Kansas Medical Society. Dr. Philip W. Morgan, Emporia, is chairman of the committee.

Dr. George C. Griffith, professor of medicine and coordinator of cardiovascular diseases at the University of Southern California School of Medicine, Los Angeles, was instructor for the course.

A dinner session was held on October 29 with Dr. Lucien R. Pyle, president, and Mr. Oliver E. Ebel, executive secretary of the Kansas Medical Society, as speakers. Members of the committee in charge of arrangements were Dr. Thomas P. Butcher, chairman; Dr. F. W. Foncannon, Dr. J. J. Hovorka, and Dr. E. J. Ryan.

The Sixth Annual Mid-West Cancer Conference will be held in Wichita, April 1 and 2, 1954.

## KANSAS COMMISSION ON ALCOHOLISM

The Kansas Commission on Alcoholism, established by law passed during the 1953 session of the legislature, announces the opening of its offices at 315 West Fourth Street, Topeka. Lewis W. Andrews is serving as executive director of the new commission.

Activities will be administered by a board composed of Harold E. Reeves as chairman, Dr. Karl E. Voldeng as vice-chairman, Carl E. Ziegler as secretary, Dr. George W. Jackson, and Dr. Z. Miles Nason.

The duties of the commission are as follows: (1) Study the problem of alcoholism, including methods and facilities available for the care, custody, detention, treatment, employment and rehabilitation of alcoholics; (2) Provide for research into factors leading to alcoholism; (3) Promote meetings for the discussion of problems confronting clinics and agencies engaged in the treatment and rehabilitation of alcoholics; (4) Disseminate information on the subject of alcoholism for the assistance and guidance of residents and courts of the state; (5) Suggest reasonable regulations respecting the care, treatment and discipline of patients and persons committed to state institutions by reason of alcoholism and (6) Make such reasonable regulations respecting the care, treatment and discipline of patients and persons committed to the commission's care and the management of the commission's affairs as the commission deems necessary.

## CANCER CONFERENCE IN WICHITA

The Broadview Hotel, Wichita, will be the scene of the Sixth Annual Mid-West Cancer Conference, April 1 and 2, 1954. Plans are rapidly being completed by the joint sponsors, the Kansas Division of the American Cancer Society and the Committee on Control of Cancer of the Kansas Medical Society.

Dr. Robert E. Speirs, Dodge City, is chairman of the Society's committee, and Dr. H. M. Wiley, Garden City, is in charge of the program.

The panel of speakers for the conference includes the following: Dr. A. N. Arneson, St. Louis, radiologist; Dr. Louis H. Clerf, Philadelphia, otolaryngologist; Dr. Warren H. Cole, Chicago, surgeon, head of Department of Surgery, Illinois College of Medicine; Dr. Hugh P. Hare, Los Angeles, radiologist; Dr. N. L. Higginbotham, New York City, surgeon; Dr. Richard H. Overhold, Brookline, Massachusetts, surgeon; Dr. C. P. Rhodes, New York City, pathologist; Dr. Arthur P. Stout, New York City, pathologist, professor of pathology at Columbia University.

On the day immediately following the conference,

April 3, the Kansas Society of Pathologists will conduct a slide seminar on "Tumors of the Lung, Mediastinum, Pleura, and Chest Wall."

The conference is open to all members of component county medical societies, physicians serving in the armed forces or the Veterans' Administration, residents, and interns.

## COURSE IN MEDICAL TECHNOLOGY

A refresher course in medical technology will be presented at the University of Kansas Medical Center, Kansas City, January 11-13. The course will consist of lectures, discussions, and demonstrations covering a wide variety of subjects, with panel discussions at the close of each day's program. Enrollment is open to all employees of medical laboratories, whether registered technicians or not, upon payment of a registration fee of \$12.

## TRUDEAU SOCIETY MEETS

The Kansas Trudeau Society, at a recent meeting held in Kansas City, elected the following officers to serve during the next year: president-elect, Dr. Charles Pokorny, Halstead; secretary-treasurer, Dr. Monti L. Belot, Jr., Lawrence; executive committee, Dr. Paul V. Joliet, Kansas City, and Dr. Michael L. Furcolow, Kansas City. Serving as president this year is Dr. Andre Baude, Topeka.

## DEATH NOTICES

### ORRIN C. LOWE, M.D.

Dr. O. C. Lowe, 70, an active member of the Miami County Medical Society, died at Paola on November 3 after an illness of two years. He had practiced there since 1914. He was graduated from the University Medical College, Kansas City, in 1912 and practiced for a short time in St. Louis before locating in Kansas. He was a veteran of World War I.

### ROBERT LEWIS McALLISTER, M.D.

Dr. R. L. McAllister, 80, died at his home in Marysville on November 1. A graduate of the Central Medical College of St. Joseph in 1898, he located first at Oketo, moving to Marysville in 1907. He was an honorary member of the Marshall County Medical Society.



# Sarcoid Lesions\*

Hugh W. McCaughey, M.D.\*\*

Kansas City, Kansas

The term "sarcoid lesion" as employed in this communication is defined as a characteristic granuloma induced by a wide variety of agents, only one of which is etiologically responsible for the generalized clinical disease, "sarcoidosis." Primary interest in this particular topic is from the point of view of differential diagnosis of the biopsied specimen reported as "sarcoid" from a patient not presenting the usual clinical manifestations of the generalized disease.

This lesion is the epithelioid granuloma. It is usually discrete and involves the lymphoreticular tissues, but any organ of the body may be the site of involvement. The lesions tend to remain discrete until the outline is blurred by fibrosis and hyalinization in the healing stage. Necrosis is not commonly a part of the lesion, but a fibrinoid type of necrosis is encountered in some of the granulomas. Giant cells of both the Langhans and foreign body types, as well as various inclusion bodies and asteroid, may be encountered within the lesions.<sup>1</sup>

Sarcoid lesions have been observed in conjunction with a variety of infectious diseases. The identification of acid-fast bacilli in these lesions has been sporadically reported since the time of Boeck. One can occasionally find side by side typical sarcoid tubercles and large caseating tuberculous lesions, the former without caseation and without bacilli, the latter teeming with bacilli.<sup>2</sup>

Leprosy may occur in a tuberculoid form histologically indistinguishable from sarcoidosis.<sup>3</sup> In fact, Boeck himself is reported to have diagnosed a case of tuberculoid leprosy as cutaneous sarcoid. Furthermore, peripheral and pulmonary adenopathy and cystic bone changes in the phalanges may further confuse the differentiation of leprosy from sarcoidosis. However, the tuberculoid forms of leprosy are almost invariably associated with the neural type of the disease.

Brucellosis in its low-grade chronic form not infrequently is associated with non-caseating granulomas. The usual lesions tend to be much less distinct than those of sarcoidosis and usually exhibit a greater degree of necrosis and surrounding inflammatory changes, but occasionally they cannot be differentiated from sarcoid lesions.<sup>4</sup>

The histopathology of sarcoid has been noted in definite association with at least one fungus infection. Reimann<sup>5</sup> reported a case in which the diagnosis of sarcoidosis had apparently been established by skin biopsy. When this patient was readmitted to the hospital four years later with severe laryngeal involvement, *Histoplasma capsulatum* was detected in granulomatous tissue secured by laryngeal biopsy. A review of the biopsied skin lesion revealed the organism. Israel<sup>6</sup> observed a case in which disseminated histoplasmosis was demonstrated in a patient who had typical clinical, laboratory, and biopsy findings of generalized sarcoidosis.

A protozoan infection, leishmaniasis, has been described as occurring in a "sarcoid form." The hyperproteinemia and hepatosplenomegaly also noted in this disease may provide further difficulty in differentiation from sarcoidosis.<sup>7</sup>

A relationship of helminth infestations to sarcoid lesions is described by Jaques.<sup>8</sup> In the described case, larvae of *Strongyloides stercoralis* were identified in the subcutaneous tissues of the perineum. It was possible to demonstrate a Schaumann body being formed from these larvae.

Sarcoid lesions have been associated with various viruses. Lofgren et al.<sup>9</sup> isolated a virus from the cutaneous or subcutaneous lesions of six patients with clinical sarcoidosis. The virus appeared to belong to the influenza-mumps-Newcastle group by agglutination and growth characteristics. Katz et al.<sup>10</sup> observed a patient with coexistent sarcoidosis and lymphogranuloma venereum, and Gendel et al.<sup>1</sup> a patient with active herpes zoster during the active stage of his sarcoidosis. An interesting patient is that reported by Eisenbud,<sup>11</sup> a fatal case of chickenpox diagnosed histologically at autopsy which presented also at autopsy sarcoid lesions of the lung, spleen, lymph nodes, and pericardium with demonstration of viral inclusion bodies in the epithelioid cells of the sarcoid lesions in the lungs.

Sarcoid lesions have been demonstrated in both primary and metastatic neoplastic processes. Prior<sup>12</sup> reported one case of ductal carcinoma of the breast without sarcoid lesions in the primary tumor but with these lesions in one-half the axillary lymph nodes examined. Another of Prior's cases presented adenocarcinoma of the stomach with serosal extension. Of the 24 lymph nodes from the resected specimen, all contained sarcoid lesions, 12 coexistent with metastatic carcinoma. Prior's third case was that of a patient

\* This is one of 11 senior theses selected for publication by the Editorial Board from a group of 15 judged the best by the faculty of the University of Kansas School of Medicine.

\*\* Thesis written while the author was a senior student. Dr. McCaughey is now interning at the University of Kansas Medical Center.

(The Council on Pharmacy and Chemistry of the American Medical Association has adopted the following statement which appears in New and Nonofficial Remedies, 1953, Philadelphia, J. B. Lippincott Company, pp. 171-173, 1953.)

## METHANTHELINE BROMIDE.—*Banthine Bromide* (Searle)

$\beta$ -Diethylmethylaminoethyl 9-xanthenecarboxylate bromide

**Actions and Uses.**—Methantheline bromide, a parasympatholytic agent, produces the peripheral action of anticholinergic drugs such as atropine and the ganglionic blocking action of drugs such as tetraethylammonium chloride. Tolerated amounts of methantheline bromide exert side effects typical of atropine-like drugs, but cause less tachycardia, and also cause less postural hypotension than does tetraethylammonium chloride. Toxic doses produce a curare-like action at the somatic neuromuscular junction.

Clinical studies indicate that the drug effectively inhibits motility of the gastro-intestinal and genito-urinary tracts and, to a variable degree, diminishes the volume of perspiration and salivary, gastric, and pancreatic secretions. It also decreases mucoprotein secretion. Like atropine, it produces mydriasis and cycloplegia when applied locally to the eye or administered systemically, but until more clinical evidence becomes available, its local use for this purpose is not recommended. The value of the drug for preventing abnormal cardiac reflexes through the vagus during thoracic surgery, or as an agent for routine preoperative medication in place of atropine, requires further investigation before final conclusions can be reached.

Methantheline bromide is indicated for clinical use whenever anticholinergic spasmolytic action is desired, provided it is not contraindicated because of its atropine-like characteristics or because of a patient's intolerance to the unavoidable side effects of such therapy. It is useful as an adjunct in the management of peptic ulcer, chronic hypertrophic gastritis, certain less specific forms of gastritis, pylorospasm, hyperemesis gravidarum, biliary dyskinesia, acute and chronic pancreatitis, hypermotility of the small intestine not associated with organic change, ileostomies, spastic colon (mucous colitis, irritable bowel), diverticulitis, ureteral and urinary bladder spasm, hyperhidrosis or control of normal sweating which aggravates certain dermatoses, and control of salivation.

Methantheline bromide produces some degree of cycloplegia and mydriasis in therapeutic doses and

therefore should not be administered to patients with glaucoma. It sometimes decreases the ability to read fine print. Xerostomia (dryness of the mouth) is a common, sometimes transient, side effect. Urinary retention of varying degrees may occur in elderly male patients with prostatic hypertrophy, and some patients may have difficulty emptying the rectum. Patients with edematous duodenal ulceration may experience nausea and vomiting during initial administration of the drug. These patients should take only liquids during the institution of drug therapy. All patients should be advised of the possible occurrence of side effects. Overdosage sufficient to produce a curare-like action may be counteracted by prompt subcutaneous injection of 2 mg. of neostigmine methylsulfate.

**Dosage.**—Methantheline bromide is administered orally or parenterally by either the intramuscular or intravenous route. Parenteral administration is not advised for patients able to take the drug orally. The average initial dose for adults, oral or parenteral, is 50 mg. For patients with considerable intolerance, 25 mg. may be employed. In the management of peptic ulcer, a beginning schedule of 50 mg. three times daily before meals, and 100 to 150 mg. on retiring is suggested. However, the usual effective dose is 100 mg. four times daily, although some patients may require more or less than this amount. The dosage may be increased to tolerance, using dryness of the mouth as a guide, and adjusted to meet the individual response of patients. Maintenance dosage in peptic ulcer is usually considered to be about one-half the therapeutic level. In the management of other hypermotile or hypersecretory states, the dosage should be adjusted to the smallest amount which will relieve the symptoms. When spastic conditions are secondary to inflammatory or other organic lesions, therapy directed toward the cause should be employed whenever possible.

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with a primary medullary adenocarcinoma of the breast in the substance of which multiple sarcoid lesions were identifiable.

Gherardi<sup>13</sup> operated upon a patient for obstructive jaundice of undetermined cause. At operation a hard mass was felt in the region of the common hepatic duct, but inaccessibility of the lesion made resection impossible. However, an enlarged lymph node lying inferior to the junction of the common and cystic ducts was removed and was diagnosed microscopically as Boeck's sarcoid. The patient died seven months later from adenocarcinoma of the bile ducts with metastases.

In the surgical material of his laboratory, Nickerson<sup>14</sup> states that sarcoid-like lesions have often been found in Hodgkin's disease, have been noted in the midst of tumor cells in cancer of the breast, and have also been seen in the retro-aortic lymph nodes in a patient who died of cancer of the stomach. Jaques<sup>15</sup> refers to ten other cases of carcinoma (involving oral cavity, skin, breast, ampulla of Vater, bronchus, and thyroid in which histologic examination revealed sarcoid lesions in the regional lymph nodes.

Beryllium granulomatosis may, in its later stages, simulate the roentgenologic and clinical findings of generalized sarcoidosis. Furthermore, histopathologic lesions indistinguishable from those of sarcoidosis are not infrequently observed in this disease.<sup>16</sup>

Sarcoid lesions have been described in association with at least one of the pneumoconioses. Skavlem et al.<sup>17</sup> report the case of an employee of an asbestos plant for 25 years who presented at necropsy typical sarcoid lesions of the lung with the occurrence of asbestos fibers and other particles in the interior of the lesions, and in some cases within the giant cells. Typical pulmonary changes incident to asbestosis were observed as well as generalized visceral sarcoidosis.

These lesions have also been observed in coexistence with a number of diseases of unknown etiology or syndromes thought to be of multiple etiology. Examples of the former include rheumatoid arthritis,<sup>18</sup> Still's disease,<sup>19</sup> rheumatic fever,<sup>1, 22</sup> hemolytic anemia,<sup>20, 21</sup> and regional enteritis.<sup>25</sup> Examples of the latter are erythema nodosum<sup>1, 22</sup> and thrombocytopenic purpura.<sup>23, 24</sup>

A large group of nonspecific agents have been shown to produce sarcoid lesions following introduction into the tissues, such as morphine, iron, aluminum hydroxide, arsenic preparations, paraffin, medicated oils, and glass and stone fragments.<sup>7, 26</sup>

The relationship of trauma to sarcoidosis and sarcoid lesions has been reviewed by Hannesson.<sup>27</sup> He mentions the cases of Maloney and Combes, in one of which sarcoid lesions appeared at the sites of hypodermic injection, and the other with involvement of

a finger which had been previously injured. Ernsting's case in which Boeck's sarcoid appeared in the scar of an eyelid which had been injured 15 years before and Montanus' case of sarcoid occurring in an appendectomy scar four years postoperatively were also described by Hannesson.

Finally, and of especial interest, are the six cases in the series of Ricker and Clark, generalized visceral sarcoidosis discovered at autopsy in patients who died traumatic deaths and were apparently enjoying good health prior to their sudden demise.<sup>28</sup>

#### CONCLUSION

Admittedly, some of the above associations of sarcoid lesions with the various diseases mentioned are likely fortuitous coexistence and do not imply cause and effect relationship. Nevertheless, this histopathologic entity, the sarcoid lesion, is a non-specific altered tissue reactivity to a great variety of agents. As such, this lesion by no means establishes the definitive diagnosis of "generalized sarcoidosis of Boeck" in the absence of typical clinical manifestations of this disease. In the patient with doubtful clinical findings, the differential diagnosis must include such disease states as chronic bacterial infections, fungus infections, infestations with protozoa or helminths, virus infections, neoplastic diseases, occupational poisoning, "collagenous diseases," and blood dyscrasias.

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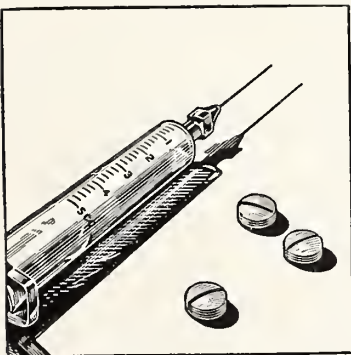
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## ANNOUNCEMENTS

The Institute of Industrial Health of the University of Cincinnati will accept applications for a limited number of fellowships for those who wish to pursue a graduate course of instruction in industrial medicine. The course consists of a two-year period of intensive training, followed by one year of practical experience. Requests for information should be addressed to the Institute of Industrial Health, College of Medicine, Eden and Bethesda, Cincinnati 19, Ohio.

The Midwest Section of the Association for Research in Ophthalmology will hold its annual meeting on Sunday, February 7, at the University of Chicago School of Medicine. The meeting will follow the annual clinical conference of the Chicago Ophthalmological Society, which will be held on February 5 and 6 at the Drake Hotel, Chicago.

The American Foundation for Allergic Diseases has been established under the joint sponsorship of the American Academy of Allergy and the American College of Allergists. Offices are maintained at 525 Lexington Avenue, New York City.

The aims of the foundation are: to promote through public education an accurate understanding of the problem of allergic diseases; to inform and educate the medical profession in the problems of allergy; to co-operate with medical institutions, hospitals, and other organizations for the development of facilities for treatment and prevention of allergic diseases, and to provide facilities for research, including fellowships and residencies.

The Council on Postgraduate Medical Education of the American College of Chest Physicians, in cooperation with the respective state chapters of the college and the staffs and faculties of hospitals and medical schools, will sponsor the second regional postgraduate course on diseases of the chest in New Orleans, February 15-19, 1954. Tuition is \$75. In-

formation may be secured from the College, 112 East Chestnut Street, Chicago 11, Illinois.

The 13th annual essay contest of the Mississippi Valley Medical Society will be held in 1954. A cash prize of \$100, a gold medal, and a certificate of merit will be given for the best unpublished essay on any subject of general medical interest, including medical economics and education. Closing date for the contest is May 1, 1954. Information may be secured from Harold Swanberg, M.D., 209 W.C.U. Building Quincy, Illinois.

The medical profession at large is invited to attend any of six sectional meetings of the American College of Surgeons to be held during the first five months of 1954. The meeting closest to Kansas will be held at Omaha, March 1-4. Among those from this area who will take part are Doctors Stanley R. Friesen, David W. Robinson, Harold L. Gainey, and Hugh G. Hamilton, all of Kansas City. Dr. Had-don Peck, St. Francis, will preside over one session.

A meeting of doctors in Alcoholics Anonymous will be held at the Mayflower Hotel, Akron, Ohio, May 14-16, 1954. The group was formed five years ago and has met annually since that time. Information and reservations may be secured through the following address "Doctors," Mayflower Hotel, Akron, Ohio.

## HOSPITAL TRAINING IS EXPANDED

That hospital training is continuing to expand is readily seen by a survey of the number of physicians today serving as interns and residents in the nation's hospitals. The number today is twice the figure for the year just prior to World War II. During the year 1952-1953, there were 7,645 interns and 16,867 resident physicians on duty, compared to a total of 12,000 in 1940.

The number of hospitals offering approved intern training has increased 12 per cent during the last 10 years. The number of internships available has risen 32 per cent, from 8,180 to 11,006. Ninety per cent of the internships offered are of the rotating type.

During the year 1952-1953, there were 4,635 residency programs in 1,131 hospitals approved by the A.M.A. A total of 22,292 residency positions were available, and the occupancy rate was 76 per cent.

There has been a marked increase in the number of residents entering certain specialty fields in the last 10 years. Psychiatry, internal medicine, and general surgery head the list.

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## THE KANSAS PRESS LOOKS AT MEDICINE

*Editor's Note. In this section the JOURNAL reproduces editorials relating to medicine which have appeared in the lay press. An effort is made to include both favorable and unfavorable comments, and the Editorial Board in no instance assumes responsibility for the opinions expressed.*

### GOOD MEDICAL NEWS

Good news continues to come from the medical front.

To take one example, the American Medical Association reports that the total number of students enrolled in approved medical schools has established a new record. The number graduated constitutes the largest group ever graduated in one academic year. Some schools are now involved in extensive expansion programs. Several national organizations are devoting their energies and resources to fund raising to help relieve the heavy financial pressure that many schools are under in these inflated times.

To take another example, the Chamber of Commerce of the United States made a survey of health protection insurance policies issued during 1952 to individuals and their families. It finds that all types of health insurance showed an increase over 1951, generally by large percentages. And this is in addition to the tens of millions of people who are protected through group insurance, Blue Cross and Blue Shield plans, mutual benefit associations, union benefit systems, and other methods of voluntary coverage.

Here is the answer to those who still argue that the only sure way to guarantee medical progress is through socialized or government-dominated medicine—and to those who are still beating the drum for compulsory government health insurance, at a cost of untold billions to the wage earners and businesses and taxpayers of this nation. No comparable country stands so high in the medical scale as ours—and free medicine has made that great achievement possible.—*Coffeyville Daily Journal*, October 11, 1953.

### VETERANS ARE TAXPAYERS TOO

How far the government should go in providing free medical treatment for veterans whose disabilities are not connected with their military service is a difficult and delicate problem.

It is unanimously agreed that every possible aid

should be given the veteran whose injury or illness is service-connected. That is a basic duty and responsibility of government, and it is a privilege for us to pay taxes to make it possible. But as matters stand now, the government hospitals are largely occupied with caring for those whose troubles have no military origin.

It can be argued that this is owed to all who served their country in war. Yet there is no way to equitably repay those who made sacrifices in widely varying degrees while in uniform. A parallel can be drawn of the man who saves another from drowning. How can such a debt be canceled?

In the pure practical sphere, the veterans are taxpayers too. There are now more than 20,000,000 men and women who served in the military forces and the number swiftly increases. If all of them are to be entitled to free medical service, the bill will be staggering—and the veterans, no less than others, will have to pay it.

Finally, the danger in a medical program such as this is that it would become so huge and powerful as to be the dominant factor in the whole medical system of the nation. And then the way to socialized or politically-bossed medicine would be wide open.

These are far-reaching matters, that must not be forgotten in the debate over the veteran problem.—*Topeka Daily Capital*, November 4, 1953.

### GAINS IN VOLUNTARY HEALTH INSURANCE

In all parts of the country the American people voluntarily increased their protection against the unexpected costs of hospital, surgical, and medical care in 1952, according to a recent report of the Health Insurance Council. Statistics to support the statement were recorded by insurance companies, Blue Cross-Blue Shield, and other independent plans.

The report shows that nearly 92 million are covered against hospital expense, an increase of more than 5½ million over 1951. More than 73 million have protection against surgical expense, an increase for the year of more than 7½ million. Nearly 36 million, an increase of 8 million, carry medical expense coverage.

Copies of the report are available on request from the Council on Medical Service of the American Medical Association.

Last year was the third consecutive year of increase in the traffic death toll.

Make hotel reservations now for the 95th Annual Session, Kansas Medical Society, Topeka, May 2-6, 1954.

# ANNUAL CLINICAL CONFERENCE

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## BOOK REVIEWS

*May's Manual of Diseases of the Eye. 21st Edition. Edited by Charles A. Perera. Published by Williams and Wilkins Company, Baltimore. 512 pages, 32 color illustrations, 346 black and white illustrations. Price \$6.00.*

This is the 21st edition of a manual of eye diseases written first by Charles H. May in August, 1900. It has long been used for student teaching at the medical school level and for reference by practitioners. Both the early editions and the current revision have effectively presented adequate information without burdensome detail.

Dr. Perera has deleted some of the obsolete material found in previous editions and has brought other material up to date. Newer concepts in the use of cortisone and ACTH in allergic and inflammatory eye diseases are presented, along with a discussion of the indications for and use of antibiotics in ophthalmology. Newer diagnostic entities such as retrolental fibroplasia are outlined, and the principle of newer operative procedures is explained.

The book as constituted is not bulky and remains a good source work for student education and general practice reference.—L.L.C.

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*Mechanisms of Urologic Disease. By David M. Davis. Published by W. B. Saunders Company, Philadelphia. 156 pages, 6 charts. Price \$4.50.*

Dr. Davis has condensed and systematized the great body of urologic information into a small and exceedingly readable textbook on urology. Disease in the urinary tract has been placed on a physiologic basis with elimination of much of the folklore of urologic practice. This book is highly recommended as a significant contribution to the field of urology.—W. L. V.

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*Gifford's Textbook of Ophthalmology. Fifth Edition. By Francis Heed Adler. Published by W. B. Saunders Company, Philadelphia. 488 pages, 281 figures, 26 color plates. Price \$7.50.*

This is an excellent textbook on ophthalmology for the medical student or general practitioner. It is well written and illustrated. Although the book is rather small, the subject matter of ophthalmology is well covered.—A. L.

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*Encyclopedia of Aberrations. Edited by Edward Podolsky. Published by the Philosophical Library, Inc., New York City. 550 pages. Price \$10.*

The book consists of numerous terms, most of them unusual. Some of the terms are explained in great detail, while others are explained in only a few words. It is not clear to this reviewer how the author decided which subjects to discuss and which subjects to define.

The psychodynamics of the aberrations are psychoanalytically explained. A number of interesting and unusual subjects such as vampirism, devil worship, etc. are given considerable coverage. More common disabilities are also discussed at length.

The main weakness of the book is that it is extremely difficult to look up a subject unless one is acquainted with the unusual Greek name. Another important weakness is that it would be of interest only to psychiatrists, and then only as a source of "unusual" material.—P. C. L.

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*A Doctor's Soliloquy. By Joseph Hayhim Krinsky. Published by the Philosophical Library, Inc., New York City. 116 pages. Price \$2.75.*

In the first chapter of this philosophical dissertation, the author quotes from Job 11:7 where Zophar, who thinks Job to be both a liar and a hypocrite, says, "Canst thou by searching find out God?" The author fails to follow up and get Job's answer in fifth reply to his false comforters. That is, (Job 19:25) "For I know that my Redeemer liveth, and that He shall stand at the latter day upon the earth."

The author follows closely upon Darwinian evolution, as a fact not as a theory, apparently unaware that scientists are finding more and more defects in this "sacred" doctrine. Modernistic religion mixed with deism, humanism, and the "social gospel" are largely the basis of the soliloquy.

The author is a sincere searcher after the truth, but he gives no evidence of having found it. One biblical verse he should ponder well is I Cor. 2:14. The word "religion" is used only three times in the Bible and the English word religious only twice. However, this author speaks of all religions as of equal merit.

This writer also makes it difficult for one who is definitely authoritarian and conservative, and believing that the Bible is the inerrant, infallible, God-breathed Word of God, to review such a tangle of self deception, despair, false hope, and false premises. Salvation is a free gift. By grace are ye saved through faith plus nothing. Good works do not count toward salvation, "Not of works lest any man should boast." There will be rewards for those who accept the "free gift" but only "depart from me I never knew you" for those who do not accept "the gift."—N. O.

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*The Nursing Mother.* By Frank Howard Richardson. Published by Prentice-Hall, Inc., New York City. 204 pages. Price \$2.95.

A book written for lay consumption extolling the virtues, physical and emotional, of breast feeding for mother and baby with instructions on technic. Despite obvious bias, the author adopts a common-sense attitude toward the problem. A section with questions and answers is included that might be well received by the young mother. Some of the material offered in support of the author's premise is old and not convincing. However, the book could serve a useful purpose in complementing information supplied to the patient by her doctor.—R. L. N.

*The Physician in Atomic Defense.* By Thad P. Sears. Published by Year Book Publishers, Inc., Chicago, Illinois. 308 pages. Price \$6.00.

A timely book has been recently released by the Year Book Publishers. The author, associate professor of clinical medicine at the University of Colorado, has certainly made a considerable study of the problem of the national civil defense effort and has made understandable for the practicing physician a difficult subject. The book is not too detailed or too long and includes an ample source of bibliographic references, plus a number of explanatory diagrams and clear photographs.

The subject matter, which is presented in fairly simple language, makes sound easy the fundamental mysteries of physics relating to the structure of the atom, the differences of the elements, the Einstein concept of mass equals energy, the difference between the various waves of radiant energy, and the tremendous binding forces within the atom, all without mathematical formulae or exclusive scientific terminology. This reviewer, who has no more special knowledge of this difficult subject than any other M.D. would have from the retreating memory of this premedical college course, found the material as developed by Dr. Sears easy to understand and most interesting.

In later chapters there are presented discussions of biologic changes due to radiation, evaluation and treatment of mass casualties after an atom bomb attack, and planning for civil defense organizations. The latter part is not quite as interesting as the earlier chapters.

This is a book which should help the individual physician and, it is hoped, the civil defense effort.—D. W. R.

*Pathology. Second Edition.* By W. A. D. Anderson. Published by C. V. Mosby Company, St. Louis. 1349

pages, 1241 illustrations, 10 color plates. Price \$16.

This very excellent textbook of pathology was first published in 1948 and now has been completely revised and brought up to date. The collaborators are all distinguished pathologists and physicians, and this book is an excellent addition to the physician's reference shelf, as well as an excellent textbook for the medical student.

The clinical considerations in the book are accurate and concise and add greatly to the understanding of basic pathology. Adequate references at the end of each chapter are a great addition to the text. These references are as recent as 1952 and are extremely useful.—W. L. V.

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States with the highest number of doctors per capita have the largest number of young men and women who want to enter medical school, according to statistics compiled by the Association of American Medical Colleges. The District of Columbia, with a doctor ratio of 31 per 10,000 population, had 19 applicants for admission to medical schools for each 10,000 population. New York ranked second.

The study shows that chances of gaining admission are greater for students living in states having

state-supported schools. All private and some state medical schools accept some out-of-state applicants, but generally students from states not supporting medical education are not accepted in as great a proportion.

Vocational rehabilitation of the adult cerebral palsied in the United States could stop a drain of \$500,000,000 a year on the national economy, in the opinion of Karl K. VanMeter, New York, who testified at a hearing on major health problems before a House of Representatives committee in Washington.

Of an estimated 350,000 adult cerebral palsy victims, Mr. VanMeter believes about 10 per cent are self-supporting. The remainder require at least \$600 each for maintenance. "If these 315,000 could be rehabilitated and made employable, even at the rate of only \$1,000 a year," he said, "the difference from an economic standpoint would be over half a billion dollars."

Saturday is the most dangerous day of the week in traffic.

Statistics show that only 5 per cent of the doctors in this country are women, as compared with 17 per cent in England and more than 50 per cent in the Soviet Union.—*Current Medical Digest*, July, 1953.

## CLASSIFIED ADVERTISEMENTS

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